

IMPLEMENTATION PLAN
for
BOLIVIAN MINERALS EXPLORATION FUND

by

Harold Kirkemo
U. S. Geological Survey

The project report series presents information resulting from various kinds of scientific, technical, or administrative studies. Reports may be preliminary in scope, provide interim results in advance of publication, or may be final documents.

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ABSTRACT

Bolivia ranks second among world producers of tin and antimony, and first in bismuth production. Mineral exports in 1975 were valued at \$314.2 million, nearly 60 percent of the value of all exports, and petroleum product exports totalled nearly \$157 million, or 30 percent of the total. Tin accounted for 58 percent of the total value of metallic mineral exports. The central government derived about 19 percent of its total tax revenues in 1975 from the mining sector.

The mining sector consists of the large, medium, and small mining sub-sectors, a classification established by the government. Individual operations are referred to as large, medium, or small depending upon the subsector into which they are classified. All large mining enterprises are owned and operated by a government corporation, COMIBOL; the medium and small operations are privately owned. COMIBOL's exports in 1975 were valued at \$171.8 million or 70 percent of the total mineral exports; the medium mines accounted for \$55.5 million or 23 percent, and the small mines for \$17.5 million or 7 percent of the total.

The combination of high operating costs, low productivity, inadequate ore reserves, and insufficient risk capital for exploration and development has led to the realization that there is an urgent need to improve the situation for mining in Bolivia. Proposals are being studied to revise the tax code, a program is underway to evaluate selected mineral deposits for possible exploration and development, and programs are under consideration to encourage minerals exploration.

A minerals exploration plan is proposed which would offer technical and financial aid to various segments in the minerals field. A program, estimated to cost between \$2 million and \$2.5 million annually, and to be operated by a new agency in the Ministry of Mining and Metallurgy, is outlined.

INTRODUCTION

A study project to develop a Mineral Exploration Fund plan to promote development of Bolivian mining was undertaken by the U.S. Geological Survey (USGS) under terms of a Memorandum of Understanding between the Bolivian Ministry of Mining and Metallurgy and the USGS executed on April 25, 1975. The Memorandum included as an amendment Project Implementation Plan No. BOL-1 (referred to as P.I.P. No. BOL-1; copy in Appendix). The term of the Memorandum was 60 months, and the initial period of P.I.P. No. BOL-1 was 12 months. The time limit was extended by mutual agreement to October 25, 1976, and finally to April 25, 1977.

P.I.P. No. BOL-1 was established to help define operating procedures, institutional arrangements, and staffing requirements for a proposed Mineral Exploration Fund (Fund). Through financial and technical assistance provided by the Fund, indigenous mine operators would be encouraged to explore, appraise, develop, and exploit mineral deposits for the purpose of expanding the mineral economy of Bolivia. Financial support for the Fund would be arranged with one or more international financial institutions such as the International Bank for Reconstruction and Development (IBRD) or World Bank.

The U.S. Geological Survey specialist, Harold Kirkemo, assigned to work on P.I.P. No. BOL-1, visited Bolivia, July 15-31, 1975, and March 29- April 2, 1976 to:

- a) review the current mining and exploration situation and practices of the mining sector,
- b) evaluate the need to stimulate and expand mineral resource exploration,
- c) evaluate Bolivian capabilities in terms of trained personnel, private companies, equipment and finances,
- d) consider means by which exploration could be stimulated and expanded, and,
- e) formulate, with Bolivian officials, a general plan and recommendations for implementing the Fund.

Data, forms, and drafts of portions of a report on a proposed mineral exploration fund were sent to Bolivian officials over a period of months following the first visit to La Paz. These included cost estimate forms, contract forms, and data on exploration programs in the United States and other countries.

Information on the Bolivian mining sector was provided by Bolivian officials during the same period, particularly in September, October, and November 1976.

During the period January 18 through February 8, 1977, Dr. Jaime Villalobos, S project officer for the Minerals Exploration Fund, visited the USGS National Center

in Reston, Virginia, and reviewed with the USGS specialist the draft report for P.I.P. No. BOL-1 and the two-volume report on a proposed Bolivian Minerals Exploration Fund prepared by the Project Officer in December 1976 for the Ministry. (This report was the basis for creating a National Mine Exploration Fund on April 26, 1977, under Executive Decree 14549--see Appendix M). Their joint memorandum prepared upon conclusion of this conference and dated February 7, 1977, included the following conclusions and recommendations:

1. A sensitivity or simulation analysis is needed to test the capability of a miner to repay the Fund, by means of royalty on production, its total expenditures for exploration, to repay industrial loans for mill and production equipment, to pay taxes on earnings, and to yield a profit. If the USGS were to undertake this analysis, the Ministry would provide the necessary data.

2. An Executive Summary Report would be prepared combining the important features of draft reports by the Ministry and the USGS. This report would be considered as the final report of P.I.P. No. BOL-1 and would be presented to the Ministry and the World Bank.

3. The USGS would either furnish or arrange for two senior mining geologists during a period of 2 or 3 months in the second half of 1977 to examine vein-type mineral deposits in Bolivia, and to select the most favorable prospects for exploration by the Fund.

4. The USGS would offer suggestions and comments on the Ministry's General and Pilot plans for the Minerals Exploration Fund and forward the remarks to the Ministry.

In response to or complying with these conclusions and recommendations the following actions were taken:

The Under Secretary, Ministry of Mining and Metallurgy, La Paz, in a letter to USGS dated March 4, 1977, advised that a sensitivity analysis would be made in Bolivia using Bolivian personnel and equipment. Also, the Ministry would consider P.I.P. No. BOL-1 to be concluded upon presentation of the Executive Summary Report, and that the total cost would be the amount (\$12,563) paid to USGS on April 28, 1975. A statement of expenditures dated May 24, 1977, prepared by the USGS showed total expenditures for P.I.P. No. BOL-1 to be \$17,096.10. (The balance of the account was offset by the support provided by the Ministry in the joint study of the potassium-lithium brines and other investigations as stated in a letter dated August 17, 1977, to the Under Secretary for Mining, Ministry of Mining and Metallurgy, from John A. Reinemund, Chief, Office of International Geology, USGS.)

An Executive Summary Report was transmitted to Dr. Villalobos and to Mr. Robert McDowell, World Bank, on June 30, 1977. The Ministry did not request USGS personnel for selecting exploration sites in the second half of 1977.

Suggestions and comments by USGS on the Ministry's report were forwarded in April 1977 to Dr. Villalobos in three transmittals totalling 16 pages.

Following are some of the abbreviations, acronyms, titles, the currency equivalent, weight, and measure equivalents used in this report.

<u>Abbreviation or acronym</u>	<u>Title</u>
Amembassy	American Embassy--La Paz, Bolivia
BAMIN	Banco Minero de Bolivia (National Mining Bank)
BISA	Banco Industrial, S.A. (The Industrial Bank - Private)
CBF	Bolivian Development Corporation
COBOEN	Comisión Boliviana de Energia Nuclear (Nuclear Energy Commission)
COMIBOL	Corporación Minera de Bolivia (National Mining Corporation)
ENAF or ENAFBOL	Empresa Nacional de Fundiciones (National smelting and refining enterprise)
GEOBOL	Servicio Geológico de Bolivia (Geological Survey of Bolivia)
HIID	Harvard Institute for International Development
IBRD	International Bank for Reconstruction and Development (World Ba
IIMM	Instituto de Investigaciones Minero-Metalurgicas (National assaying, metallurgical testing, and research entity)
INSO	National Occupational Health Institute
SIDERSA	Empresa Siderurgica Boliviana S.A. (Iron and Steel state-owned company)
UNDP	United Nations Development Programme
	<u>Currency equivalent</u>
1 Bolivian peso (\$b)	U.S. \$0.05

Weight and measure equivalents

1 kilogram (kg)	2.2046 lbs.
1 metric ton (mt)	2,204.6 (rounded to 2,205) lbs. = 1.102 short tons = 1,000 kg
1 long ton	2,240 lbs.
1 centimeter (CM)	0.39 inch
1 meter (m)	39.37 inches
1 kilometer (km)	1,000 meters
1 hectare	10,000 square meters = 2.47 acres

Acknowledgements

Interviews and discussions were held in La Paz in July 1975 with Gen. Ing. Jose Antonio Zelaya Salinas, Minister, Ing. Armando de Urioste Sanchez Bustamante, Under Secretary, Ing. Gonzalo Gutierrez Moscoso, Director of Metallurgy, Ministry of Mining and Metallurgy, Dr. Fernando Urquidi B., and other officials and staff members of Servicio Geologico de Bolivia (GEOBOL); J. G. Henderson, Minerals Attaché (retired in 1975), and John H. Curry, Regional Minerals Attaché, U.S. Embassy, La Paz; representatives of Banco Minera de Bolivia (BAMIN)--Corporacion Minera de Bolivia (COMIBOL)--Asociacion Nacional de Mineros Medianos (Association of Medium Miners); Camara Nacional de Mineria (Association of Small Miners); and Drs. Malcolm Gillis, Glen Jenkins, and Ulrich Petersen, and Mr. Brian Wright, Harvard Institute for International Development.

Dr. Fernando Urquidi B., since March 1976 Minerals Advisor, U.S. Embassy, La Paz, and previously the Director, Inventariacion de Recursos Minerales de la Mineria Chica (Small Mines and Mineral Resources Inventory Unit), GEOBOL, was the first technical counterpart for this study. He arranged for consultations in La Paz, in July 1975, and furnished much of the background information for the first draft report which was dispatched in October 1975.

Ing. Gonzalo Gutierrez Moscoso, and Dr. Jaime Villalobos S., staff geologist, Ministry of Mining and Metallurgy, were designated in March 1976 as the Bolivian counterpart technical team for the Fund. They provided most of the data on costs and information on conditions up to mid-1976 for mineral exploration and development in Bolivia. Dr. Villalobos was particularly helpful during the discussions in La Paz in March-April 1976, and was responsible for compiling most of the information received in 1976 on the Bolivian mining situation. Dr. Villalobos was

appointed Project Officer for the Minerals Exploration Fund on April 20, 1976, and was designated Director General of the Fund on April 26, 1977.

In Washington, D.C., discussions were held with Robert J. Rodger and Robert A. McDowell, IBRD. Thanks are due colleagues in the USGS for counsel and advice, and especially to Dr. John H. DeYoung, Jr., for his analyses of revolving fund schedules considered for the proposed Minerals Exploration Fund.

During the initial period of fact-finding for this study, the Institute for International Development (HIID), Harvard University, Cambridge, Massachusetts, was conducting a study on taxation and the mining sector in Bolivia. Discussions with members of the tax study group in La Paz were very informative. A three-volume report titled "Taxation and the Mining Sector in Bolivia" issued in December 1975, presents a comprehensive analysis of the subject, and offers detailed guideline proposals for restructuring the mining tax system of Bolivia. A copy of this report was made available to the author while in La Paz by the Director of Metallurgy, Ministry of Mining and Metallurgy. Due to the overlapping interest of taxation and the financial aspects of mining exploration and development, pertinent information, particularly statistical data compiled in Bolivia by researchers for the tax report, was used in this study for an Exploration Fund.

Equally useful to the study were the Industry Outlook Reports for minerals, 1973-74 and 1975, prepared by the Regional Minerals Attaché, United States Embassy, La Paz. Thanks, too, are extended to Mr. John Curry, Regional Minerals Attaché, and Dr. Urquidi for expediting communications.

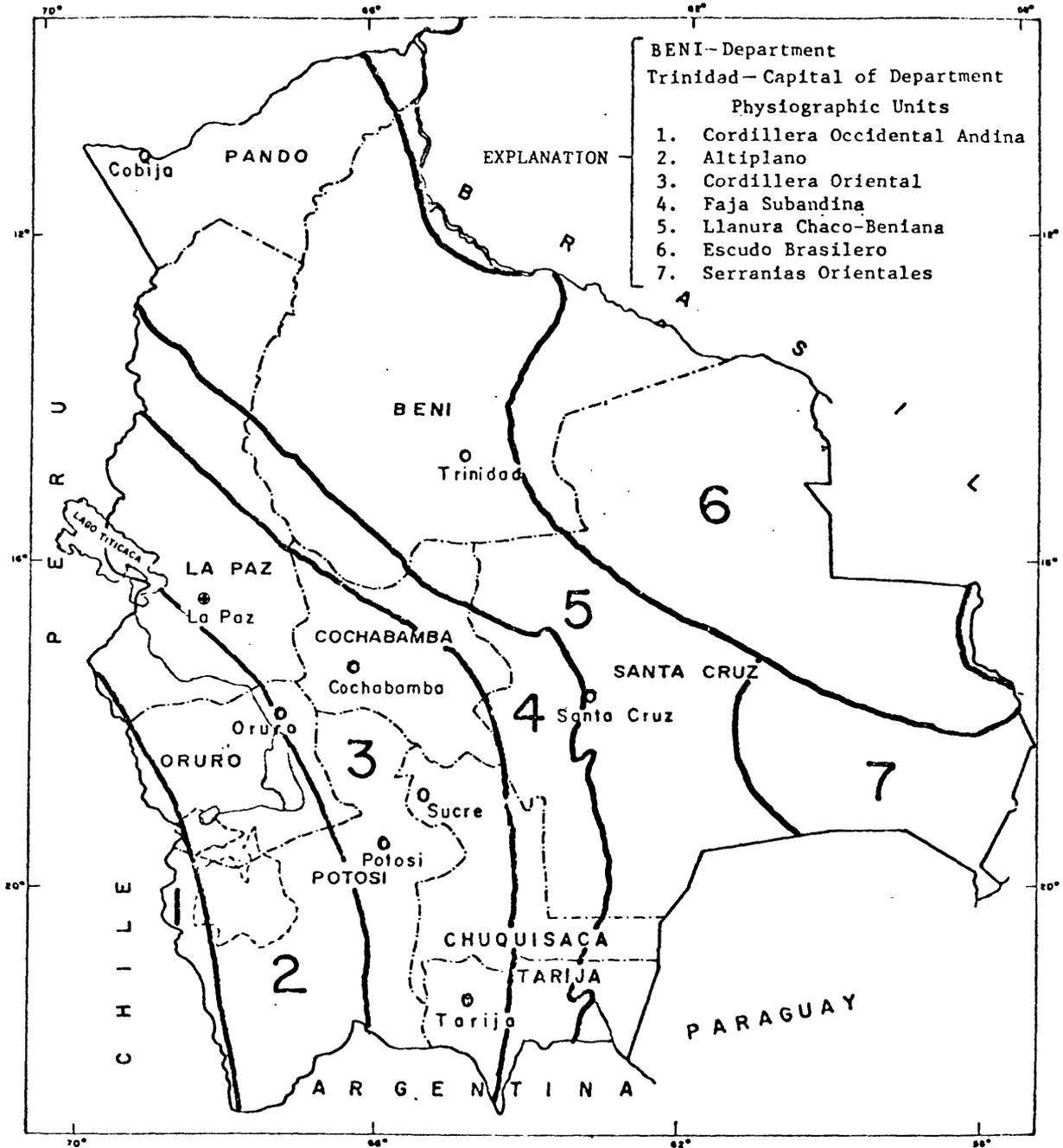
Geology

The Andean region of Bolivia, included in physiographic units 1-4 in figure 1, is underlain by rock units or structures whose trends generally reflect the coastlines of Chile and Peru. North-trending structures extend from Chile and Argentina into Bolivia to the general vicinity of Potosi, Sucre, and Santa Cruz, and continue on a north-westerly course (N.50-60° W.) into Peru. Mineral belts in the region roughly parallel these trends (fig. 2), but are modified by local structural or depositional controls.

East of the Andean region is the lowland area of the Amazon basin which is flanked on the east by the Precambrian shield area of western Brazil, and on the southeast by Paleozoic and Mesozoic rocks. Ages and dominant rock types in the physiographic units of Bolivia are as follows:1/

1/ Servicio Geologico de Bolivia, 1968.

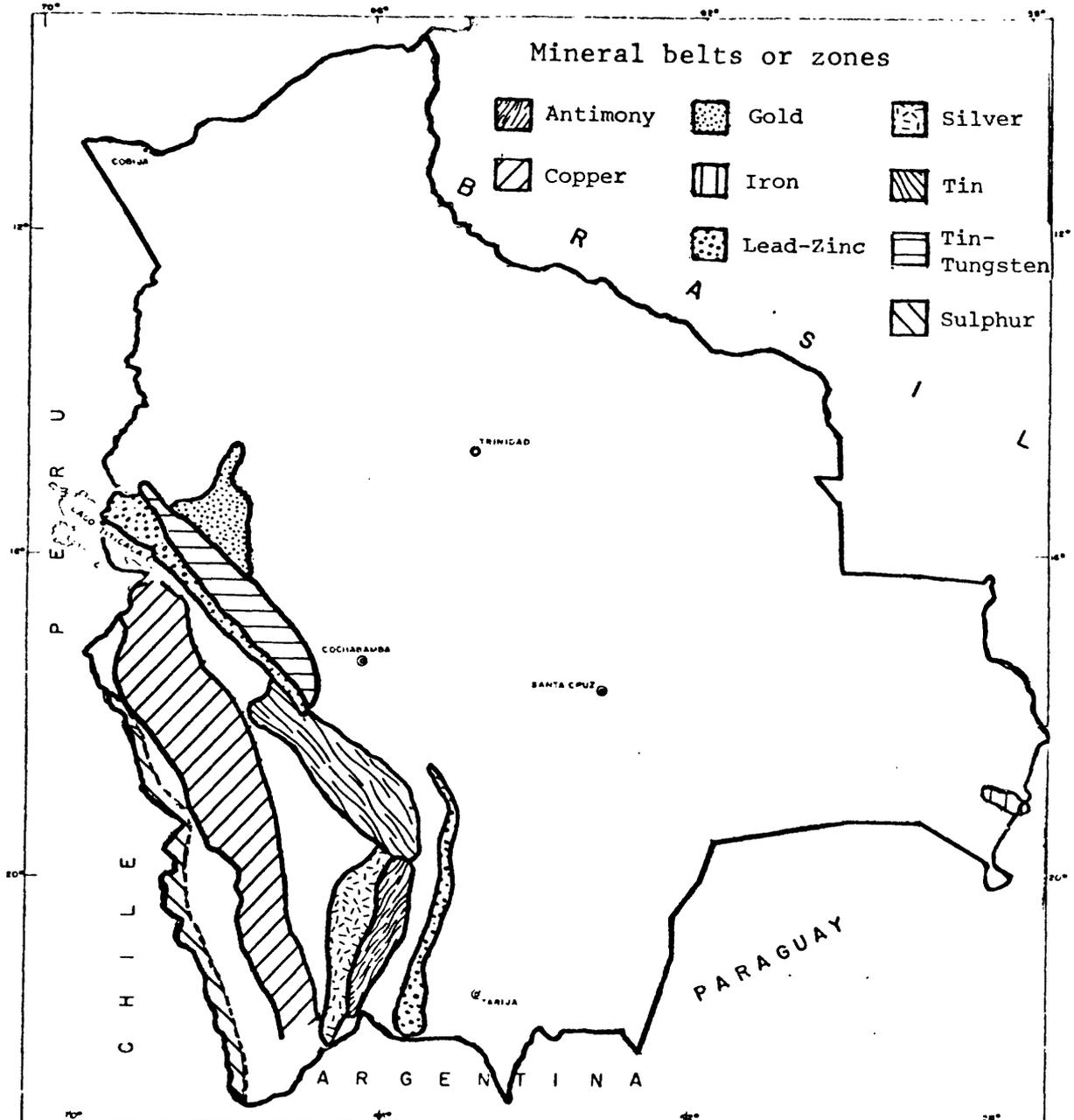
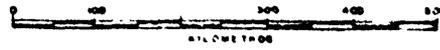
BOLIVIA



Adapted from Servicio Geologico de Bolivia, GEOBOL, 1968.

Figure 1.--Physiographic units and Departments

BOLIVIA



Source: Small Mines and Mineral Resources Inventory unit, GEOBOL, 1975

Figure 2.--Principal mineral belts or zones

<u>Physiographic unit</u>	<u>Age and rock type</u>
Cordillera Occidental Andina	Quaternary and Tertiary volcanics
Altiplano	Tertiary continental sediments
Cordillera Oriental	Mainly Ordovician, Silurian, Devonian shale and sandstone. Other Paleozoic and Mesozoic formations and Tertiary volcanics also present, as are granitic batholiths, particularly in the tin-tungsten mineral belt
Faja Subandina	Miocene-Pliocene sandstone and conglomerate
Llanura Chaco-Beniana	Quaternary fluvial and residual material
Escudo Brasileiro	Precambrian crystalline and metamorphic rocks
Serranias Orientales	Paleozoic and Mesozoic sedimentary and metamorphic rocks

The mineral belts or zones are identified by GEOBOL by the major mineral or minerals present in ore deposits within these areas. Different boundaries and designations for the belts and zones have been described by other investigators, but everyone recognizes that the deposits generally occur as veins within batholiths and in altered rocks of contact zones bordering these igneous bodies; or in similar settings associated with igneous stocks or volcanic rocks (the so-called 'subvolcanic deposits').

The mineral belts and zones represent a small fraction of the total area of Bolivia, but they constitute significant areas of the Altiplano and Cordillera Oriental physiographic units.

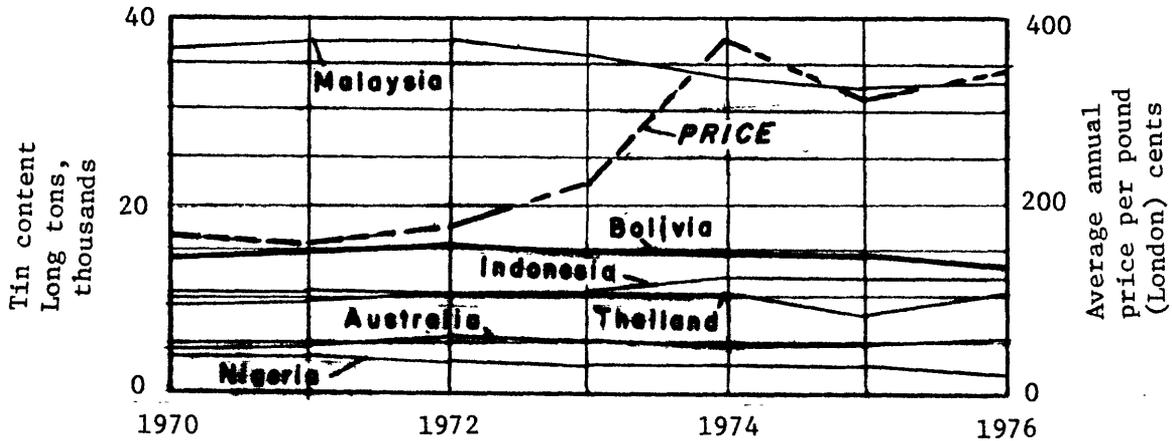
The mineral production of Bolivia to date has been derived from relatively few deposits, many of which have been known for years. Thirty to 40 percent of the country has been prospected only by reconnaissance-type surveys. Modern geologic techniques and methods have been used on a few of the most promising areas in the mineral belts, and are being used in the concession areas granted to various investigative teams now working in Bolivia. The outlook for many important mineral discoveries is favorable, considering that the mineral belts have not been adequately prospected or explored, and that large areas outside the belts offer promising geologic conditions for prospecting and exploration.

Bolivia's mineral resource position

Exports

Bolivia is a leading producer and important future supplier of tin, and an important producer of bismuth, antimony, and tungsten. The country ranks second

among world producers of tin, exclusive of The People's Republic of China and the U.S.S.R., as indicated in figure 3. Total tin reserves are estimated to rank third among the same producing countries. Tin mining has dominated the Bolivian minerals sector since the early 1900's, and will continue to do so in the foreseeable future. Bolivia is a member of the International Tin Council and a signatory to and producer participant in the Fifth International Tin Agreement which became effective July 1, 1977.



Sources: USBM Minerals Yearbooks 1972, 1974
Commodity Data Summaries 1976, 1977

Figure 3.--Annual production by leading tin-producing countries, 1970-76, exclusive of The People's Republic of China and the U.S.S.R., and annual average price.

The dependence of Bolivia on tin exports for the major share of foreign exchange earnings from metallic mineral exports, the leading mineral commodities contributing to Bolivia's export trade, and Bolivia's position among world producers of selected commodities are shown in table 1.

Table 1.--Principal metallic mineral exports, percent of total export value, and Bolivia's ranking among world producers in 1975.

<u>Commodity</u>	<u>Percent of total value of metallic mineral exports^{1/}</u>	<u>Ranking among world producers</u>
Tin	58	2
Zinc	13	*
Silver	9	9
Tungsten	7	6
Antimony	5	2
Copper	2	*
Bismuth	2	1
Lead	2	*

* Not ranked among ten leading producers.

^{1/} Source: Ministerio de Minería y Metalúrgia, 1976.

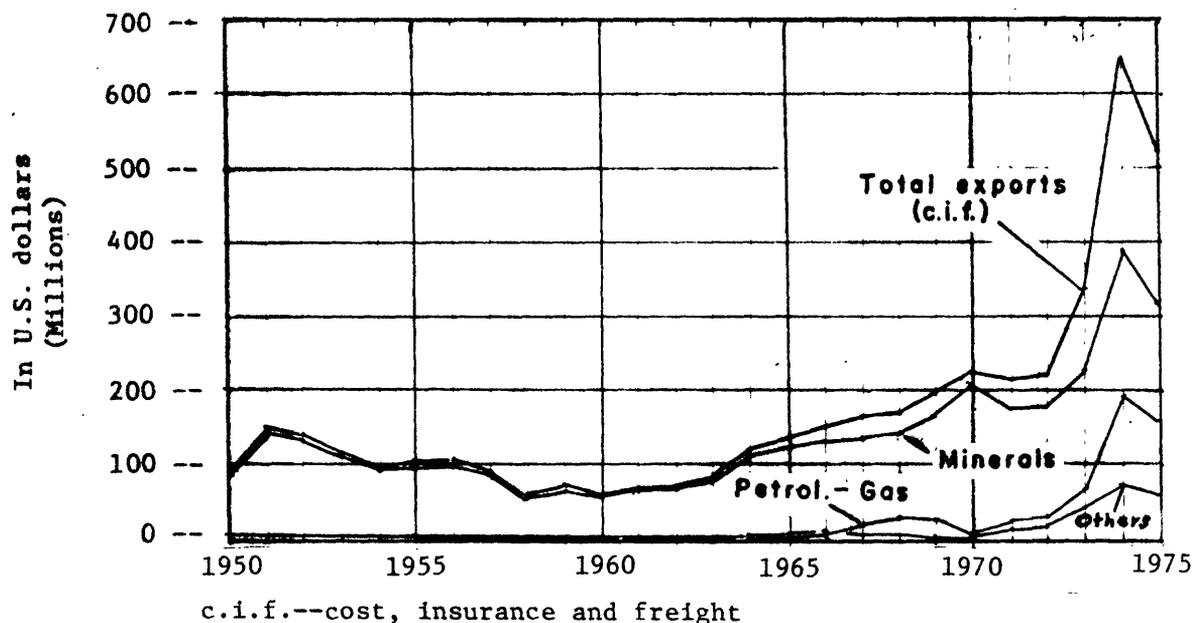
The total value of Bolivian exports and the relative share attributed to minerals, petroleum products, agricultural and other products in the period 1950 through 1975, are shown in table 2. In the past quarter century, minerals and petroleum products accounted for 86 to nearly 100 percent of the total value of exports, with non-fuel minerals accounting for 77 to over 99 percent of the total annual values in the period 1950 through 1972. Exports of agricultural and other products averaged about 5 percent of the total value in the same period of time. Although rising metal prices more than doubled the value of mineral exports between 1972 and 1974, the share of the total represented by the minerals sector dropped to about 60 percent in 1974 and 1975, mainly as a result of the increase in the export value of petroleum products. The fuels sector has gained in importance since the late 1960's, and accounted for nearly 30 percent of the total value of Bolivia's export trade in 1974 and 1975, as indicated in figure 4.

Comparisons of values of mineral exports by several countries indicate that the value of Bolivian mineral exports per capita is not large, and the

Table 2.--Value of Bolivian exports, 1950-1975

Year	Minerals ^{1/}		Petroleum Products ^{2/}		Products from farms and other sources ^{3/}		Totals	
	\$U.S.	%	\$U.S.	%	\$U.S.	%	\$U.S.	%
1950	89,513,622	95.01	180,900.-	0.19	4,524,200.-	4.80	94,218,792	100.00
1951	144,496,691.-	95.95	284,791	0.19	5,808,769.-	3.86	150,590,251	100.00
1952	135,986,571.-	96.23	208,743.-	0.15	5,108,026.-	3.62	141,303,340	100.00
1953	109,486,596.-	97.18	200,759.-	0.18	2,976,481.-	2.64	112,663,836	100.00
1954	98,664,584.-	99.21	540,461.-	0.54	247,668.-	0.25	99,452,713	100.00
1955	97,761,404.-	95.50	2,294,497.-	2.24	2,318,314.-	2.26	102,374,215	100.00
1956	99,968,856.-	93.05	2,893,899.-	2.69	4,574,519.-	4.26	107,437,274	100.00
1957	88,423,763.-	90.54	4,670,463.-	4.78	4,574,163.-	4.66	97,667,409	100.00
1958	55,730,352.-	86.09	5,088,966.-	7.86	3,917,457.-	6.05	64,736,775	100.00
1959	68,957,262.-	88.82	3,109,228.-	4.01	5,568,182.-	7.17	77,634,672	100.00
1960	59,873,177.-	88.27	3,482,786.-	5.14	4,471,969.-	6.59	67,827,932	100.00
1961	68,996,553.-	90.62	2,135,965.-	2.81	5,003,849.-	6.57	76,136,367	100.00
1962	70,190,884.-	92.21	1,452,735.-	1.91	4,479,105.-	5.88	76,122,724	100.00
1963	80,527,338.-	93.20	1,783,319.-	2.06	4,093,122.-	4.74	86,403,779	100.00
1964	107,891,197.-	94.78	720,157.-	0.63	5,235,755.-	4.59	113,837,109	100.00
1965	124,809,710.-	94.67	741,667.-	0.56	6,284,663.-	4.77	131,836,050	100.00
1966	131,467,098.-	87.39	6,605,802.-	4.39	12,363,480.-	8.22	150,436,380	100.00
1967	134,345,005.-	80.77	22,874,668.-	13.75	9,104,974.-	5.48	166,324,647	100.00
1968	138,968,959.-	81.44	24,288,179.-	14.23	7,391,777.-	4.33	170,648,915	100.00
1969	167,167,150.-	84.35	23,125,540.-	11.67	7,897,856.-	3.98	198,190,546	100.00
1970	209,921,222.-	93.05	10,214,116.-	4.53	5,455,154.-	2.42	225,590,492	100.00
1971	173,325,598.-	80.28	23,877,330.-	11.06	18,711,537.-	8.66	215,914,465	100.00
1972	174,133,759.-	76.88	31,711,901.-	14.00	27,664,796.-	9.12	226,510,456	100.00
1973	225,919,993.-	66.82	66,961,800.-	19.77	45,400,000.-	13.41	338,281,793	100.00
1974	397,279,046.-	60.17	193,114,200.-	30.00	63,300,000.-	9.83	643,693,246	100.00
1975	314,228,167.-	59.38	156,955,700.-	29.66	58,000,000.-	10.86	529,183,867	100.00

Sources: ^{1/} MINISTERIO DE MINERIA Y METALURGIA--Depto. de Estudios Economicos.
^{2/}, ^{3/} BOLETIN, BANCO CENTRAL.



Source: Ministerio de Minería y Metalurgia, 1976.

Figure 4.--Value of Bolivian exports, 1950-1975

value of mineral exports per square kilometer of land area is small, but the nation is very dependent upon the mining sector for export earnings as shown in table 3.

Table 3.--Comparison of values of mineral exports by several countries

Country	Per capita GNP (US\$)	Per capita value of mineral exports (US\$)	Per capita mineral exports share of per capita GNP (percent)	Value of mineral exports per square kilometer of land area (US\$)
<u>1973</u>				
BOLIVIA	203	42.29	20.8	204
Chile	752	117.24	15.6	1,569
Philippines	214	7.81	3.7	1,049
<u>1974</u>				
BOLIVIA	223	70.38	31.6	349
Chile	782	175.26	22.4	2,413
Philippines	230	11.27	4.9	1,560

Adapted from: HIID, v. 1, Table 2-6, p. II-34.

The importance to the central government of mining taxes for revenues is shown below:

Table 4.--Mining taxes, 1973-1975, and budgeted for 1976.

<u>MINING TAXES</u>				
(In millions of \$b)				
	<u>1973</u>	<u>1974</u>	<u>1975</u>	<u>1976</u>
	<u>ACTUAL</u>	<u>ACTUAL</u>	<u>ACTUAL</u>	<u>BUDGETED</u>
A. Taxes on mines in:				
Private sector	433.3	371.4	199.6	200.0
Public sector	<u>45.0</u>	<u>303.6</u>	<u>225.6</u>	<u>428.0</u>
Total	478.3	675.0	425.2	628.0
B. Special Export Tax	<u>452.2</u>	<u>800.1</u>	<u>622.2</u>	<u>340.0</u>
C. Total	930.5	1,475.1	1,047.4	968.0
<u>Central Government</u>				
<u>Revenues</u>	2,424.5	4,840.3	5,581.4	6,810.0
Mining Taxes as				
% of total revenues	38.4	30.5	18.8	14.2

Source: Amembassy La Paz, 1975, p. 7.

Although important for foreign exchange earnings, tax revenues, and expenditures in the domestic markets, the mining sector accounts for only about 11 to 12 percent of Bolivia's gross national product, and at most, employs 3 percent (between 60,000 and 75,000 workers) of the nation's force. The report by HIID, however, emphasized that the impact of the mining sector is very significant in four levels of the national economy:

- 1) domestic markets through expenditures for labor, materials, and transportation services,
- 2) export markets for foreign exchange earnings as mentioned previously,
- 3) principal base for tax revenues to the Central Government, and,
- 4) impact on Central Government management of bank credit and/or money supply by cyclical fluctuations in revenues from the mining sector and in export-import taxes.

Detailed analyses of these impacts, presented in volume I, Chapter III, of the HIID report, show that a strong mining sector is needed to help support the Bolivian economy.

Production and exports

Data on production and exports in 1973, 1974, and 1975 by the three subsectors of the mining industry in Bolivia are shown in table 5, A and B. Data on fuel exports and totals for the mineral industry in the same period are shown in table 5, C and D. Production statistics are not available for all products listed, so export data must be relied upon in comparisons of relative values of individual commodities or groups of commodities. In an economy where domestic consumption of minerals is small, probably not exceeding 2 to 3 percent of production, exports may be expected to more nearly equal production than the data indicate. The differences probably are due to various factors such as export quotas established by the International Tin Agreement; sales to domestic smelters, refineries or BAMIN; and, where exports exceed production, sale of inventories accumulated from previous years' production.

These tables show the dominance of tin in Bolivia's nonfuel mineral export trade, and the relatively minor share of values attributed to other metallic mineral products. The small impact of nonmetallic mineral commodities on the total value of exports is not surprising considering the generally low value and bulk nature of the nonmetallics listed. However, their importance to the economy of the country may increase as domestic industry expands, and especially so if more valuable nonmetallic mineral commodities are found and developed. Recent press reports of the discovery of important deposits of lithium in southern Bolivia suggest the possibility for developing a new mineral enterprise.

The importance of fuels to the mineral economy of the country has been noted earlier. Data in table 5 show that tin and fuels accounted for 40 and 31 percent, respectively, of the total value of mineral exports in the period 1973-1975.

BOLIVIAN MINING ENTERPRISES

Bolivian mining enterprises are classified by the government into three groups--the large mining subsector, the medium mining subsector, and the small mining subsector. All enterprises in the large mining subsector are owned and operated by the government. The medium and small mining subsectors include all operations in the private sector. A new group identified as "mining cooperatives" is included in the Small Mining subsector for reporting purposes. Another group designated as "Other exporters" is considered to be in the medium mining subsector, although official export statistics for "other exporters" are reported separately.

Table 5.--- Bolivian Mineral Production and Exports in 1973, 1974, and 1975
(metric tons except gold which is reported in kilograms).

A. Metallics

	Large mines		Medium mines		Small mines		Totals ^{1/}		Value of exports US\$ (thous.), CIF
	Production	Exports	Production	Exports	Production	Exports	Production	Exports	
Tin									
1973	20,601	14,599	5,863	4,210	3,256	2,409	29,720	28,410	130,993
1974	19,813	15,224	6,136	3,541	3,078	2,821	29,027	28,954	230,117
1975	20,272	14,310	5,503	2,968	4,476	1,360	30,251	26,441	181,130
Zinc									
1973	40,768	38,631	10,414	10,937	0	0	51,181	49,568	25,963
1974	32,590	32,969	11,798	14,829	1,585	802	45,973	49,015	37,657
1975	31,656	33,607	12,563	15,328	2,247	610	46,466	49,544	40,333
Antimony									
1973	0	0	9,122	11,540	3,260	3,239	12,383	14,800	17,353
1974	0	0	8,800	10,056	3,161	3,004	11,961	13,071	29,115
1975	0	0	9,407	9,580	4,560	2,215	13,967	11,915	17,153
Copper									
1973	3,845	3,516	3,035	4,028	1,091	686	7,971	8,230	13,440
1974	3,667	3,444	2,874	3,803	893	660	7,433	7,923	16,018
1975	3,404	3,005	2,356	2,980	122	6	5,882	5,991	7,263
Silver (Complex)									
1973	160	145.8	0	0.5	2	8.5	161.7	164.3	12,561
1974	146	158.3	0	0.2	3	14.3	148.5	179.4	26,834
1975	148	185.1	200	4.7	7	14.0	155.7	203.6	28,543
Wolfram									
1973	995	1,009	2,341	1,420	327	339	3,663	2,768	11,128
1974	977	1,003	2,184	1,307	282	273	3,443	2,618	21,096
1975	1,112	1,021	2,022	1,301	33	229	3,168	2,551	22,298
Lead									
1973	14,055	13,178	399	3,858	6,450	3,116	20,904	20,152	8,347
1974	12,097	13,968	266	1,891	5,260	3,473	17,623	19,353	11,471
1975	11,831	14,228	353	2,129	3,834	1,308	16,018	17,665	7,706

Table 5.--Continued.

	Large mines		Medium mines		Small mines		Totals ^{1/}		Value of exports US\$ (thous.), CIF
	Production	Exports	Production	Exports	Production	Exports	Production	Exports	
Bismuth									
1973	561	542	1	5	10	3	572	569	4,378
1974	595	678	0	3	19	7	614	714	12,700
1975	591	6.3	0	21.3	12	0	603	612	7,528
Cadmium									
1973		56		0		0		56	430
1974		110		0		0		110	983
1975		156		0		0		156	1,332
Iron									
1973		7,914		2,450		0		10,364	138
1974		7,587		0		0		7,587	90
1975		0		19,740		0		19,740	137
Manganese									
1973		0		193		0		193	10
1974		0		154		0		154	8
1975		0		371		0		371	18
Arsenic									
1973		0		0		0		0	0
1974		0		8		0		8	3
1975 (anhydride)		0		10		0		10	5
Gold (kilograms)									
1973	18.9	1.0	0	0	1,132.82/	0	1,151.7	1.0	1.7
1974	18.8	1.9	0	0	1,290.52/	0	1,309.3	1.9	5.7
1975	12.8	0	0	0	1,636.02/	0	1,648.8	0	0
TOTAL EXPORT VALUES--METALLICS									
1973									224,742
1974									386,098
1975									313,446

1/ Includes materials credited to mines, smelters, and other sources.

2/ South American Placers production and purchases by Banco Minero de Bolivia.

Table 5 .--Continued.

B. Nonmetallics.

	Weight in Metric Tons Fine.				Total Exports	Value of exports US\$ (thous.), CIF
	(No data available on production by subsectors)					
	Large Mines (No data available)	Medium Mines Exports	Small Mines Exports	Total Exports		
Sulphur						
1973		56,393	0	56,393	1,155	
1974		41,778	0	41,778	1,024	
1975		21,921	0	21,921	722	
Gypsum						
1973		1,400	0	1,400	22	
1974		3,251	0	3,251	36	
1975		570	0	570	3	
Calcite						
1973		105	0	105	1	
1974		83	0	83	2	
1975		85	0	85	2	
Barite						
1974		3,851	0	3,851	74	
1975		1,805	0	1,805	35	
Marble						
1974		41	0	41	3	
Magnesite						
1974		200	0	200	20	
1975		60	0	60	8	
Sodium Sulphate						
1975		70	0	70	6	
TOTAL EXPORT VALUES-- NONMETALLICS						
1973	--	--	--	--	1,178	
1974	--	--	--	--	1,159	
1975	--	--	--	--	776	

Table 5.---Continued

C. Fuels.

				<u>Value of exports US\$ (thous.)</u>
Petroleum and Natural Gas	--	--	--	
1973	--	--	--	66,962
1974	--	--	--	193,114
1975	--	--	--	156,956

D. Summaries of Values of Exports of Mineral Commodities.

<u>1973</u>					<u>Value of exports US\$ (millions)</u>
<u>Metallics</u>	--	--	--	--	224.7
Nonmetallics	--	--	--	--	<u>1.2</u>
Total	--	--	--	--	225.9
Fuels	--	--	--	--	<u>67.0</u>
Total 1973	--	--	--	--	292.9
<u>1974</u>					
<u>Metallics</u>	--	--	--	--	386.1
Nonmetallics	--	--	--	--	<u>1.2</u>
Total	--	--	--	--	387.3
Fuels	--	--	--	--	<u>193.1</u>
Total 1974	--	--	--	--	580.4
<u>1975</u>					
<u>Metallics</u>	--	--	--	--	313.4
Nonmetallics	--	--	--	--	<u>0.8</u>
Total	--	--	--	--	314.2
Fuels	--	--	--	--	<u>157.0</u>
Total 1975	--	--	--	--	471.2

Sources: Ministerio de Minería y Metalurgia, 1975, Chapters I and II, and 1976, Parts III and IV.
 Amembassy La Paz, 1975 and 1976.

The following table shows the gross value and share, in percent, of mineral exports, exclusive of petroleum and natural gas, by mining sub-sectors, "Other exporters," and smelters in the period 1971-1975.

Table 6.--Mineral export values 1971-1975. (Values in millions of U.S. dollars)

Mining subsector	1971		1972		1973		1974		1975	
	Value	%	Value	%	Value	%	Value	%	Value	%
Large mines (COMIBOL)	91.3	62.3	93.1	64.2	114.7	64.4	196.4	64.4	171.8	70.2
Medium mines	32.8	22.4	31.5	21.7	44.9	25.2	70.8	23.2	55.5	22.7
Small mines (BAMIN)	22.5	15.3	20.5	14.1	18.6	10.4	37.6	12.4	17.5	7.1
Sub-totals	146.6	100.0	145.1	100.0	178.2	100.0	304.8	100.0	244.8	100.0
Smelters	23.9	--	24.7	--	36.2	--	66.8	--	57.8	--
Other exporters	2.8	--	4.3	--	11.4	--	15.7	--	10.6	--
Totals	173.3	--	174.1	--	225.8*	--	387.3	--	313.2*	--

Source: Ministerio de Minería y Metalurgia, 1976, pages 114, 118, 122, 128, 131, and 132.

* Totals are not in agreement with data on page 132 in source report, which shows 225.9 million and 314.2 million for 1973 and 1975, respectively.

Enterprises in the public sector are the dominant entities in the mineral economy of Bolivia. The Ministry of Mining and Metallurgy is responsible for COMIBOL, the corporation operating the largest mines in the nation, and for SIDERSA which is charged with establishing an integrated steel industry and for developing and operating the iron and manganese deposits of Bolivia. The mining bank, Banco Minero (BAMIN), a dependent institution of the Ministry, extends loans, offers technical and marketing assistance, and operates ore and concentrate purchase depots established in La Paz, Oruro, Potosi, Tupiza, Cochabamba, Tipuani, and Uyuni.

IIMM, the Mining and Metallurgical Institute, located in Oruro, is a public institution, also under the Ministry, which is responsible for research on mineral concentration, mining planning, smelting, refining, and technical services such as laboratory analysis.

Other institutions in the public sector having an influence on the mineral economy of the country are:

The Central Bank which operates as the central national bank of Bolivia.

COBOEN--an organization to negotiate exploration and exploitation contracts for developing Bolivia's uranium and other radioactive mineral resources.

CBF, the Bolivian Development Corporation, which is authorized to enter into equity positions in large enterprises, including mining.

INSO, the National Occupational Health Institute, which is concerned with occupational diseases in all sectors, including mining.

Universities in Oruro, Potosi, and La Paz, which offer curricula in geology, mining and metallurgical engineering.

Large mining subsector

The large mining subsector includes the properties that were operated by the Patino, Aramayo, and Hochschild interests prior to nationalization under D.S. 3223 of October 31, 1952 (raised to status of law by the Law of October 29, 1956), and other mines which have been nationalized since then. These properties now are owned and operated by the State entity, Corporacion Minera de Bolivia (COMIBOL), which was created by D.S. 3196 of October 2, 1952, and is managed by the Ministry of Mining and Metallurgy. The corporation also operates two metallurgical units--the National Smelting Corporation's (ENAF) high-grade tin smelter in Vinto near Oruro and an antimony smelter adjacent to the tin smelter. A smelter for treating low-grade tin is under construction adjacent to the high-grade tin smelter in Vinto. The high-grade tin smelter has an annual capacity of 20,000 metric tons of tin.

By 1980, it is planned that ENAF will have an annual capacity of 30,000 tons, sufficient to smelt about 80 percent of Bolivian tin concentrate production expected by that time. ENAF also hopes that by 1980 almost all minerals in the country will be processed to a considerable extent in its smelters or refineries. This would include facilities for processing tin, silver, lead, bismuth, tungsten, zinc, copper and antimony.

The following 20 mining enterprises (Empresa Minera) operated by COMIBOL were credited with mine production in 1975:

Bolivar	Corocoro	Oploca-Santa Ana
Bolsa Negra	Huanuni	Quechisla
Catavi	Japo	Santa Fe
Caracoles	Matilde	San Jose
Chroloque	Morococala	Tasna
Colquechaca	Ocuri	Unificada
Colquiri		Viloco

Source: COMIBOL, 1976, Produccion de Minerales de la Corporacion Minera de Bolivia de Los Años 1952 - 1976 en Peso Fino (kilos).

Tin is the principal product from 17 mines. Copper is the main product from Corocoro and zinc is the main product from the Matilde enterprise. Properties under COMIBOL's jurisdiction are situated in 58 separate mining districts at altitudes ranging from about 3,000 meters to above 5,000 meters.

COMIBOL accounted for about 70 percent of the total value of Bolivian mineral exports in 1975 (see table 6) and was responsible in 1973-1975 for 53 percent, by weight, of total tin exports, 72 percent of lead, 71 percent of zinc, and 65 percent of bismuth exports (see table 5). About 53 percent of the total mining tax revenues to the central government in 1975 were paid by COMIBOL. About one-fourth of COMIBOL's total production comes from cooperatives, private miners, repurchases of stolen ore, and mines leased to private firms and cooperatives. At year-end 1975, assets were about \$274 million, and long-term liabilities and reserves totalled \$80.2 million. Mineral sales in 1975 totalled about \$212.5 million, production and marketing costs were \$216.9 million, mine operating loss was \$4.4 million, and net loss was \$10.7 million. On December 31, 1975, COMIBOL's employees totalled 25,573 compared to 24,556 a year earlier. (Ministerio de Minería y Metalurgia, 1976, p. 34.)

In 1975, the work force was distributed about as follows--37 percent on the surface, 36 percent underground, 15 percent in zinc plants, and 12 percent in health and education activities. (Amembassy La Paz, 1976, p. 17.)

COMIBOL's metallic mineral production in the years 1952 through 1975 is shown in Appendix L. Four enterprises--Catavi, Colquiri, Huanuni and Unificada--accounted for 74 percent of the total tin produced by COMIBOL during the first 24 years of operation. The Catavi enterprise alone accounted for nearly 32 percent of the total for COMIBOL, and about 43 percent of the production by the four leading producers.

In the period 1973-1975, Catavi's production slightly exceeded the total production of the Medium Mining subsector, and exceeded by 63 percent the total output of the Small Mining subsector in the same period.

COMIBOL's costs for mining and marketing tin in the 6 years, 1971 through 1976, were summarized as follows in Industrial Outlook Reports:

Table 7.--Tin Mining and Marketing Costs (US\$/lb)

<u>Year</u>	<u>Mining cost</u>	<u>Export taxes</u>	<u>Royalties</u>	<u>HTIS^{1/}</u>	<u>Total cost on market</u>	<u>Aver. tin price (LME)</u>
1971	1.10	0.14	0.00	0.31	1.55	1.59
1972	1.03	0.18	0.08	0.35	1.64	1.71
1973	1.05	0.37	0.23	0.48	2.13	2.18
1974	1.60	0.24	0.81	0.59	3.24	3.71
1975	1.59	0.21	0.55	0.67	3.02 ^{2/}	3.11
1976	2.02	0.28	0.72	0.78	3.80 ^{3/}	3.40

^{1/} Handling, Transport, Insurance, Smelting

^{2/} Ministerio de Minera y Metalurgia, July 1976, Informe No. 3, and Amembassy 1977, p. 10, reports \$3.03 per pound.

^{3/} Costs are provisional and subject to modifications. A special study by the Ministry for the International Tin Council reports production cost of tin metal to be \$3.59 per pound. (Metals Week, May 2, 1977).

Sources: Amembassy 1976, p. 11, and Amembassy 1977, p. 10.

Available reports on COMIBOL operations do not identify specific or general exploration projects such as diamond drilling, crosscutting, exploratory drifting and raising at its major properties for the purpose of developing additional reserves of ore. It is assumed that this type of work is in progress and that geological mapping and sampling is performed on a regular basis by a resident staff at each operating mine to determine exploration targets. Such projects would be logical successor projects to the discoveries made by the recently completed 2,100 meter crosscut at the Caracoles mine, announced by COMIBOL on February 19, 1975. This crosscut intersected 16 tin-bearing veins and is reported to have cost about \$960,000. Exploratory drifts and raises on the promising structures in this crosscut to determine lateral and vertical extent of the veins, and the grade and potential tonnage of ore should receive priority attention in order to either extend the life of existing mines or to develop new mines.

In its plans for exploration at the Caracoles mine in the period 1975-1979, COMIBOL indicates a 4-year prefeasibility study at a cost of \$103,000. Continued studies of this nature are necessary and should be on-going at all major operating mines, but additional effort and funds should be dedicated to "Proving-out" discoveries made by prefeasibility and feasibility studies.

A report that COMIBOL in April 1975 undertook another crosscut of 1,472 meters at the Caracoles mine suggests that a viable exploration program is continuing here; however, the project is not included in the list of exploration projects. On the basis of the cost to complete the 2,100 meter crosscut discussed above, the second crosscut will require an expenditure of at least \$675,000, an amount nearly \$100,000 greater than the combined projected funding for the eight exploration projects planned by COMIBOL.

A Five-Year Development Plan for the period 1975-1980, under the guidance of the Ministry of Mining and Metallurgy, includes 47 prospecting and exploration projects (COMIBOL, 39 projects; GEOBOL, 5 projects; and COBOEN, 3 projects) at a total estimated cost of \$6.17 million. Most of COMIBOL's projects are mining exploration projects presumably located in its mines or within the 5-kilometer wide belt (Fiscal Reserve) around each property. Detailed surface and geological investigations and diamond drilling are programmed, but details of individual projects are not available. Whether the projects scheduled from mid-1976 in the following list or shown in figure 5 are included in the Development Plan is not known.

Table 8.--Prospecting and exploration projects summary--COMIBOL

<u>Type of project</u>	<u>1968 to Mid-1976</u>		<u>Mid-1976 to completion</u>		<u>Total cost</u>
	<u>Cost</u>	<u>No.</u>	<u>Cost</u>	<u>No. of projects</u>	
Prospecting	\$870,800	3	\$325,400	3	\$1,196,200
Exploration	<u>1,434,200</u>	<u>11</u>	<u>580,400</u>	<u>8</u>	<u>2,014,600</u>
Total	\$2,305,000	14	\$905,800	11	\$3,210,800 ^{1/}

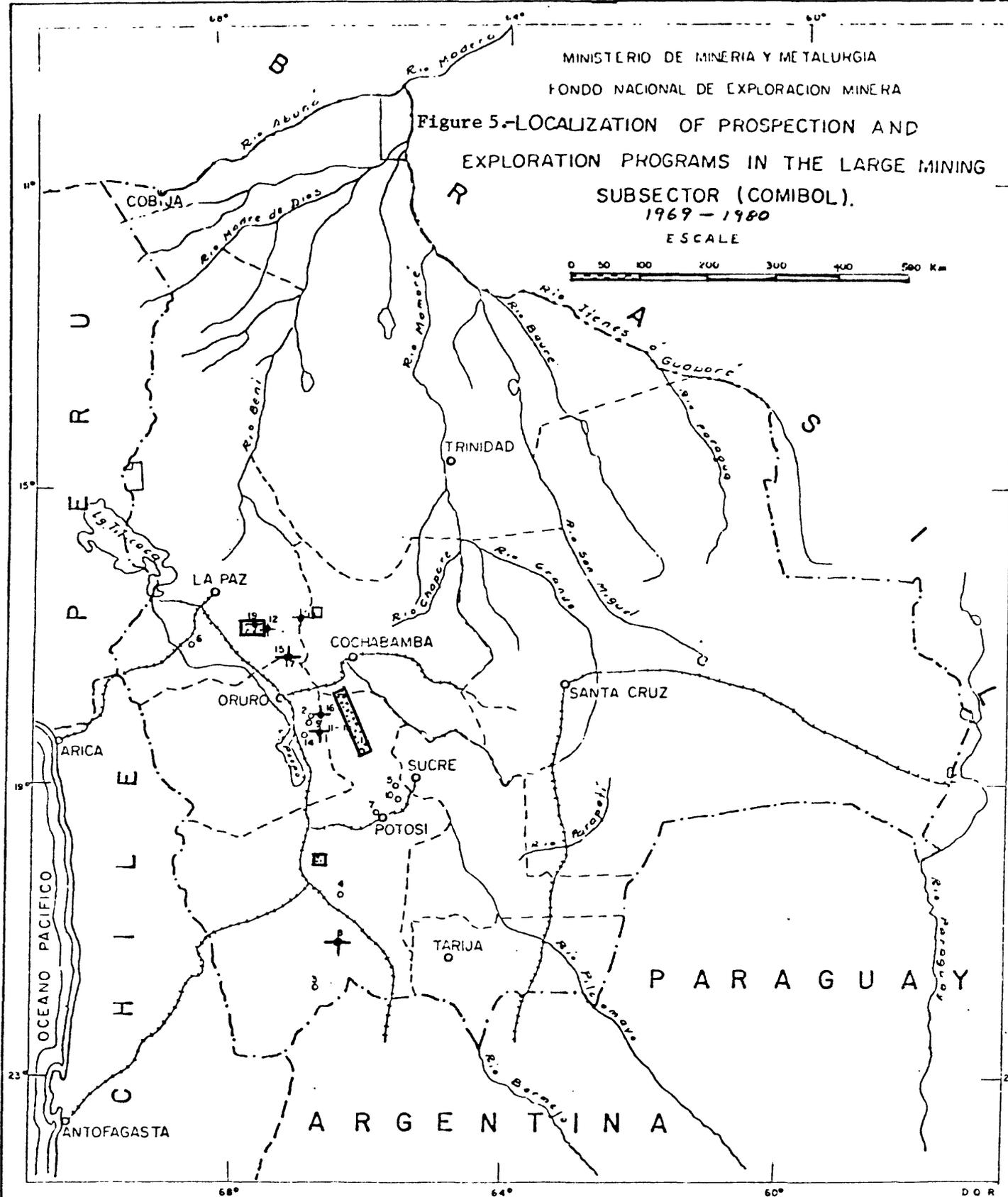
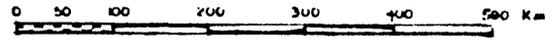
^{1/} Funded by COMIBOL except for \$100,100 expended by Dowa Mining Co. at Minera Bolivar project.

The technical staff employed in July 1976 by the Geological Exploration Department, COMIBOL, and personnel available on a consulting basis from agencies and departments of the Government included about 46 personnel. The staff included geologists and geological engineers (36), geophysicist (1), geochemist (1), mining engineers (2), photo-geologist (1), and topographers (5). Experience listed for these individuals ranged from 1 1/2 to 28 years and averaged 8.2 years.

The Geological Exploration Department in mid-1976 possessed about a dozen field vehicles, 7 hammer drill units, a dozen units of geophysical equipment, and three optical instruments. In addition, COMIBOL has engaged two private

Figure 5.-LOCALIZATION OF PROSPECTION AND
 EXPLORATION PROGRAMS IN THE LARGE MINING
 SUBSECTOR (COMIBOL).
 1969 - 1980

ESCALE



- Prospection project completed, 1969 - 1976.
- ▣ Prospection project, 1976 - 1980.
- Exploration project completed, 1969 - 1976.
- ✦ Exploration project, 1976 - 1978.

concerns, Dowa Mines Co., and Golder Associates, for geological and geophysical research and diamond drilling. Three Government agencies are available for mineralogical and metallurgical work.

The corporation recognizes the need to replace the hammer drill units, and to obtain 5 diamond drill units, a dozen light vehicles and trucks, field instruments, and additional equipment for analytical and research laboratories. Also needed are technical advisors specializing in geophysics, geochemistry, and geological appraisals.

COMIBOL seeks risk capital from domestic and foreign institutions to support its requirements for additional equipment and technical advisory services.

Two types of reserves are reported by COMIBOL--underground and surface. Underground reserves include material which has not been mined. Surface 'reserves' include material in mine dumps, mill tailings, and other accumulations from the processing of previously mined rock. It is uncertain from the information on hand which type of reserve may include material in laterites or placers. Though surface 'reserves' are a valuable source of minerals, their exploitation is primarily a metallurgical problem, not a geological problem.

Published estimates by COMIBOL (1975) of reserves of selected materials report totals to the closest ton. Facts seldom are available to warrant this degree of accuracy.

Another summary of COMIBOL reserves in 1974, presumably based on data obtained from COMIBOL show different quantities and grades than COMIBOL published, as table 9 illustrates.

Available information offers little evidence to evaluate the ore reserve situation in the large mining subsector. Conflicting data on reserves in a single year as noted above, uneconomic grade (lead 2.7% in 1974), and listing exact quantities where facts do not warrant, suggest that a realistic appraisal is needed. The general opinion of those concerned with the problem is that discovery and development of additional reserves is a prime necessity if the mining sector is to remain an important segment of the economy.

The private sector includes all enterprises in the medium and small mining subsectors, the mining cooperatives, and Banco Industrial (BISA), a private development bank that provides financing in the private industrial sector.

Table 9.--Estimated reserves of selected materials in COMIBOL properties in 1974
(quantities in metric tons)

<u>Commodity</u>	<u>COMIBOL Report*</u>			<u>Industrial Outlook Report**</u>			
	<u>Reserves</u> 1/	<u>Grade, %</u>	<u>Metal Content</u>	<u>Commodity</u>	<u>Reserves</u> 2/	<u>Grade, %</u>	<u>Metal Content</u>
Tin	20,177,370	1.01	204,134	Tin	17,759,000	0.948	168,416
Copper	1,274,073	2.18	27,782	Copper	1,216,000	2.185	26,576
Bismuth	848,422	1.11	9,430	Bismuth	797,000	1.123	8,950
Silver	2,519,317	3.71	934,387	Silver	2,061,000	0.0372	767
Lead	2,037,005	2.70	54,922	Lead	1,665,000	2.838	47,261
Zinc	5,482,496	8.89	487,365	Zinc	2,384,000	12.372	294,949
Wolfram	67,041	1.37	916	Wolfram	29,000	1.459	423

1/ Reserve categories not stated.

2/ Includes measured, indicated and inferred reserve categories.

Sources: *Corporacion Minera de Bolivia, 1975, pages 90-91

**Amembassy La Paz, 1975, pages 18-19

Medium Mining subsector

In recent years, the medium mining subsector has included 27 to 34 (1976) private companies, of which 2 are controlled by foreign interests, and 4 or 5 others have some participation interest by foreign firms. Medium mining enterprises must meet the provisions of D.S. 05674 of December 30, 1960, which requires a paid-in capital of not less than U.S. \$100,000, and a minimum monthly production of 5.5 metric tons of fine tin or tungsten; or 20 tons of antimony or zinc; or 15 tons of lead or simple copper; or 10 tons of copper in complexes; or 500 kilograms of silver.^{1/} The subsector is considered to be the most dynamic in the mining industry in responding to market changes and governmental policies. The Association of Medium Miners, Asociacion Nacional de Mineros Medianos, is a trade group representing companies in the subsector. Member firms of the Association and their principal mineral products are listed in table 10.

Table 10.--Firms and enterprises in the Medium Mining subsector and principal mineral products in 1976

<u>Firm or enterprise</u>	<u>Principal product</u>
Atoroma Ltda.	Tin
Avicaya Ltda.	Tin
Barrosquira Ltda.	Tin
Berenguela Ltda.	Tin
Bernal Hnos.	Antimony
Caballo Blanco Ltda.	Zinc, tin, silver
Casado Hnos.	Antimony, copper, lead
Canaviri	Tin
Cerro Grande Ltda.	Tin
Cebadillas Ltda.	Antimony
Compañía Explotadora de Minas Ltda. (CEM)	Tin
Compañía Minera del Sur S.A. (COMSUR)	Tin, antimony, lead, zinc
Churquini Enterprises, Inc.	Antimony
"Don Vicente"	Tin
Empresa Minera Unificada S.A. (EMUSA)	Antimony, tin
Esmoraca Ltda.	Bismuth, silver
Estalsa Boliviana Ltda.	Tin
Fabulosa Mines Consolidated	Tin
HORMET S.A.	Tin
International Mining Co.	Tin, wolfram
Lequechico Ltda.	Tin, zinc, silver
Nitto Bolivia Mining Co.	Copper
Empresa Minera Pabon	Tin, copper, silver
Santa Isabel Ltda.	Wolfram, antimony
San José de Berque	Antimony, wolfram, lead, bismuth

^{1/} Pan American Union, p. 22.

Table 10.--Continued

<u>Firm or enterprise</u>	<u>Principal product</u>
San Juan Ltda.	Antimony, copper, tin, lead, zinc
San Luis Ltda.	Antimony, copper
Schiavi Industrial Minera	(No products listed)
Semivi Ltda.	Antimony
Soteca Ltda.	Tin, copper
Suka Ltda.	Tin
Tarumita Ltda.	Antimony and others
Ursic, Orlandini y C ^{ía} . Ltda.	Tin
Yana Mallcu Ltda.	Tin

Sources: Asociacion Nacional de Mineras Medianos, (no date), p. 15.
 Ministerio de Minería y Metalurgia, 1976b, v. 1, p. 31.

The Medium Mining subsector accounted for 21 to over 25 percent of the total value of exports by the mining sector in the period 1971-1975. Nearly 70 percent of the exports of antimony, over 50 percent of the tungsten, and about 22 percent of the tin exports are credited to this subsector. Taxes in 1974 amounted to about 25 percent of the total paid by the mining sector to the central government and represented about 8 percent of the total tax revenues received by the government. Exports in 1975 were valued at about U.S. \$56 million.

The subsector employed about 7,500 persons annually in 1974 and 1975. Nineteen of the 25 firms in the subsector in 1975 had fewer than 300 employees and five had between 500 and 1,000 employees.

Exploration activities in the medium mining subsector are restricted by high operating costs, high taxes, and metal price fluctuations. The majority of the companies conduct exploration work sufficient only to replace the ore reserve mined each year. Some operators acquire small mines which offer good possibilities for developing ore reserves rather than undertake projects on their own properties. Other operators are reported to have invested funds in enterprises such as construction and agriculture where chances for possible profit are better than in mining. Three or four firms are involved in projects to explore favorable structures and to develop new mines.

Leading producers of eight mineral commodities produced in the Medium Mining subsector, and relative share of production in the years 1973, 1974, and 1975 are shown below.

Table 11.--Leading producers and percentage of total production of mineral commodities in Medium Mining subsector, 1973-1975

(See previous table for complete titles of companies)

<u>Commodity</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>
Tin	CEM, 35% Estalsa, 19% Avicaya, 10%	Estalsa, 24% Ursic, 13% Fabulosa, 12%	Estalsa, 26% Int. Min., 15% Fabulosa, 11%
Antimony	EMUSA, 62% Casado, 15%	EMUSA, 72% San Juan, 13%	EMUSA, 76% San Juan, 11%
Wolfram	San Jose, 100%	Int. Min., 50% San Jose, 25%	San Jose, 52% Int. Min., 47%
Zinc	COMSUR, 99%	COMSUR, 98%	COMSUR, 99%
Copper	Nitto Bol., 99%	Nitto Bol., 97%	Nitto Bol., 99%
Lead	Casado, 92%	Casado, 92%	Casado, 97%
Silver	--	--	EMUSA, 100%
Bismuth	San Jose, 100%	--	--
Complex minerals			
Wolfram-tin	Int. Min., 100%	Int. Min., 100%	Int. Min., 100%
Lead-silver	San Jose, 100%	--	San Jose, 100%
Tin-silver	--	Canaviri, 100%	Canaviri, 100%
Copper-silver	Min. Pabon, 100%	--	--

Sources: Ministerio de Minería y Metalurgia, 1976, Informe No. 2, (3.1).

Ministerio de Minería y Metalurgia, 1976, Estudio de Factibilidad del Fondo Nacional de Exploración Minera, v. 2, Table No. 2, p. 86 for 1975.

Data on production costs in the Medium Mining subsector are incomplete. Replies to questionnaires requesting such information from producing companies were more numerous from producers of tin as shown by the following record. Overall, the data probably range from poor to excellent in representing costs in the subsector. Data from a single producer may or may not be representative of costs by other producers operating in similar circumstances.

Table 12.--Production cost data, 1973-1975,
Medium Mining subsector

<u>Mineral</u>	<u>Period</u>	<u>No. of producers and no. (in parens.) furnishing data</u>	<u>Average cost per</u>	
			<u>Metric ton</u>	<u>Pound</u>
Tin	1973- 1st half	19 (10)	\$2,679.49	\$1.21
	2nd half	19 (7)	3,561.12	1.61
	Annual average		3,075.44	1.39
	1974- 1st half	19 (7)	2,488.07	1.13
	2nd half	19 (1)	5,978.56	2.71
	Annual average		2,865.17	1.29
	1975- 1st half	19 (6)	6,657.52	3.02
	2nd half	19 (5)	6,406.89	2.91
	Annual average		6,568.09	2.98
Antimony	1973- 1st half	10 (3)	911.22	9.23
	2nd half	10 (3)	1,055.94	10.70
	Annual average		986.04	10.00
	1974- 1st half	19 (2)	1,659.37	16.82
	1975- 1st half	10 (1)	1,011.43	10.26
	2nd half	10 (1)	1,276.24	12.94
	Annual average		1,173.71	11.90
Complex minerals	1973- 1st half	1 (1)	1,258.69	0.57
	1974- 1st half	1 (1)	1,400.73	0.63
Lead-silver	1973- 1st half	1 (1)	203.24	0.092
	2nd half	1 (1)	229.68	0.10
	Annual average		216.29	0.098
	1974- 1st half	1 (1)	3,837.90	1.74
Wolfram-tin	1975- 1st half	1 (1)	5,334.02	2.42
	2nd half	1 (1)	4,573.90	2.08
	Annual average		4,888.06	2.22

Source: Ministerio de Minería y Metalurgia, 1976, Informe No. 9

Small Mining subsector

The Small Mining subsector in the past has included all private mines not meeting the classification prescribed for the Medium Mining subsector. A new mining subsector identified as Mining Cooperatives, previously included in the Small Mining subsector, was formally recognized in June 1976, and legislation is being considered to establish its legal responsibilities.

Exports, principally of tin and antimony, credited to the Small Mining subsector in 1975 totalled about \$17.5 million and represented about 7 percent of the total value of Bolivia's mineral exports. About 90 percent of small mine output is sold to BAMIN and the remainder is sold to foreign buyers. Cooperatives are obligated to sell to BAMIN or COMIBOL although special arrangements can be made to sell copper and sulphur to other buyers. Small miners indebted to BAMIN are obliged to settle their debts before selling their mineral production to other buyers, and are free to export their minerals through and with the authorization of BAMIN.

The number of small firms active each year varies with economic conditions and in prosperous years has totalled nearly 4,300 firms, plus 100 to 120 firms in the "others" category. The number of workers employed by the small mining firms ranges from 15,000 to 23,000.

The National Chamber of Mining (Camera Nacional de Minería) represents the majority of the small mining firms in discussions and meetings with the government and the public on problems of interest to the group. Likewise, the Association of Cooperatives (Asociación Nacional de Cooperativas Mineras) represents the interests of the cooperative firms.

Production by the cooperatives in 1975 was valued at about \$23 million, and most of it was sold to COMIBOL. The Association of Cooperatives reported that 97 cooperatives were active in six regions. Employees of the cooperative associations number from 16,000 to nearly 23,000 persons.

Cooperatives normally lease from COMIBOL the properties they operate, and because of the short time period of interest in the properties, they are unable to obtain credit from banks. Their common mining practice is to extract the better grade ore, thereby leaving marginal grade ore for possible but improbable future exploitation.

Data on sales to BAMIN in 1974 by small mine operators in three Departments are shown in the following tables. Data for 1975 were not available for analysis.

Table 13.--No. of producers, quantity and grade of materials sold to BAMIN agencies in 1974 in the Departments of Potosi, Oruro, and La Paz by producers in the Small Mining subsector.

<u>Dept. and material</u>	<u>No. of producers</u>	<u>Net sales</u> (Metric tons)	<u>Metal content</u>	<u>Grade %</u>
<u>Potosi</u>				
Tin	398	4,800	1,227	25.6
Antimony	151	1,987	1,172	59.0
Copper	48	1,637	371	22.7
Lead	73	1,748	1,193	68.2
Bismuth	35	50	8	16.0
Silver	53	310	284	91.6
Zinc	53	1,297	725	55.9
Jamesonite	2	3	2	66.7
Wolfram	11	3	2	66.7
<u>Oruro</u>				
Tin	349	2,532	928	36.6
Antimony	105	1,066	605	56.8
Copper	59	549	118	21.5
Lead-silver	29	466	315	67.6
Bismuth	9	21	5	23.8
Silver	2	13	5	38.5
Zinc-silver	2	66	23	34.8
Wolfram	34	65	45	69.2
<u>La Paz</u>				
Tin	317	1,507	655	43.5
(No data available for other products in the Department of La Paz)				
Totals (Tin only)	1,064	8,839	2,810	31.8

Source: Ministerio de Minería y Metalurgia, written communication, July 22, 1976, Report No. 2 (2.2)

The following data account for 91 percent of total tin production by the Small Mining subsector in 1974, and probably represent the general situation for the entire sector.

Table 14.--Number of sales of tin in 1974 by producers in the Small Mining subsector to BAMTN agencies in the Departments of La Paz, Oruro, and Potosi classified by weight categories.

<u>Weight of individual sales</u> (metric tons) <u>Concentrates (neto)</u>	<u>Number of sales</u>				
	<u>Departments</u>			<u>Total</u>	<u>%</u>
	<u>La Paz</u>	<u>Oruro</u>	<u>Potosi</u>	<u>no. of sales</u>	
Less than 5	261	268	270	799	75
5 - 10	29	35	47	111	10
10 - 20	14	24	28	66	6
20 - 40	6	8	23	37	3
40 - 60	2	4	13	19	2
60 - 80	3	5	2	10	1
80 - 100	0	0	5	5	1
+ 100	<u>2</u>	<u>5</u>	<u>10</u>	<u>17</u>	<u>2</u>
Totals	317	349	398	1,064	100

Tin content (fino)

Less than 5	295	313	342	950	89
5 - 10	12	17	23	52	5
10 - 20	4	8	19	31	3
20 - 40	4	8	11	23	2
40 - 60	1	1	2	4	
60 - 80	0	1	0	1	1
80 - 100	<u>1</u>	<u>1</u>	<u>1</u>	<u>3</u>	
Totals	317	349	398	1,064	100

Table 15.--Tin content of sales in 1974 to BAMIN agencies in the Departments of La Paz, Oruro, and Potosi classified by weight categories.

Weight category, (metric tons,tin)	Tin content of sales in 1974 (metric tons)				
	Departments			Total	
	La Paz	Oruro	Potosi	Weight	%
0 - 5	256	296	315	867	31
5 - 10	70	124	163	357	13
10 - 20	56	104	240	400	14
20 - 40	132	204	317	653	23
40 - 60	44	41	97	182	7
60 - 80	--	68	--	68	2
80 - 100	<u>97</u>	<u>91</u>	<u>95</u>	<u>283</u>	<u>10</u>
Totals	655	928	1,227	2,810	100

Of the 1,064 sales recorded, less than 50 were multiple sales by the same producer. No producer made more than about 4 sales during the year, and the cumulative production represented by multiple sales was not large enough to seriously affect the distribution by weight categories.

These data indicate that:

1. Producers of less than five tons of tin annually accounted for 75 percent of the total number of Small Mine producers in the three Departments.

2. Producers of less than five tons annually accounted for 31 percent of the total tin contained in concentrates sold to BAMIN agencies in these Departments. Also, producers of no more than 40 tons of tin contained in concentrates accounted for 81 percent of the tin sold to BAMIN.

No ore reserve estimates are available for the small mining subsector. Virtually no reserves are developed in advance of current operations because of the economic necessity to mine ore and derive immediate income to offset expenses; in other words, 'hand-to mouth' types of operations are commonplace. However, opportunities likely exist in the small mines for discovering deposits with good potential for significant reserves because of the large number of properties which have not been explored.

GEOBOL has compiled information on 5,240 small mines and has classified the data by types of minerals produced as the following table shows:1/

Table 16.--No. of small mines in six Departments listed by types of minerals produced

<u>Department</u>	<u>Commodity</u>	<u>No. of small mines</u>		<u>Total</u>
		<u>Single mineral</u>	<u>Complex mineral by main mineral</u>	
Chuquisaca	Tin	3	0	3
	Antimony	16	0	16
	Copper	22	0	22
	Bismuth	1	0	1
	Zinc	8	11	19
	Lead-zinc	--	119	119
	Total	50	130	180
Cochabamba	Tin	24	0	24
	Antimony	16	0	16
	Copper	5	8	13
	Tungsten	1	0	1
	Zinc	0	1	1
	Lead-silver	0	41	41
	Total	46	50	96
La Paz	Tin	848	20	868
	Antimony	159	8	167
	Copper	153	144	297
	Tungsten	332	2	334
	Bismuth	11	0	11
	Zinc	4	1	5
	Lead-silver	--	184	184
	Total	1,507	359	1,866
Oruro	Tin	210	17	227
	Antimony	78	16	94
	Copper	55	44	99
	Tungsten	33	7	40
	Bismuth	0	1	1
	Lead-silver	0	28	28
	Total	376	113	489
Potosi	Tin	1,056	60	1,116
	Antimony	483	31	514
	Copper	283	21	304
	Tungsten	52	8	60
	Bismuth	33	23	56
	Zinc	21	34	55
	Lead-silver	--	496	496
	Total	1,928	673	2,601

Table 16.--Continued

<u>Department</u>	<u>Commodity</u>	<u>No. of small mines</u>		<u>Total</u>
		<u>Single mineral</u>	<u>Complex mineral by main mineral</u>	
Tarija	Copper	1	0	1
	Zinc	0	2	2
	Lead-silver	0	5	5
	Total	1	7	8
Grand Total		3,908	1,332	5,240

The preceding data indicate that average annual production by the individual operator in the Small Mining subsector is very low, and he therefore is unable to undertake an exploration project of consequence on his own resources, even on matching fund or joint participation basis with outside interests. One means of providing assistance to these operators is the current "prefeasibility project" conducted by GEOBOL, which is discussed later in the report. Another means would be for a Government agency to undertake an exploration or development project that could be mutually beneficial to a number of operators in the same district. For example, if a mineral deposit owned or being mined by a number of operators warrants exploration, an exploration project might be undertaken with the financial support of an exploration fund in a joint venture arrangement whereby the owners would pledge to pay royalties on future production in order to compensate the fund for its expenditures on their behalf. Opportunities for joint venture agreements are suggested by the records of sales to BAMIN, discussed above, which show about 150 sales of tin-bearing material mined in Concepcion canton (region), Frias province, Department of Potosi; 52 sales from Quime canton, Inquisive province, Department of La Paz; and 46 sales from Antequera canton, Poopó province, Department of Oruro.

Many opportunities exist for developing new operations, as is suggested by the following data which was compiled from statistics prepared by BAMIN and GEOBOL.

1/ Amembassy, La Paz, 1975, p. 39, 40.

Table 17.--Number of known mines, producers, and inactive mines in La Paz and Potosi Departments (tin only)

<u>Department</u>	<u>Known mines</u>	<u>Producers</u>	<u>Inactive mines</u>
La Paz	848	317	531
Potosi	<u>1,056</u>	<u>398</u>	<u>658</u>
Totals	2,114	715	1,189

Although producers with more than one operating mine are included in these statistics, their numbers are small and do not adversely affect the conclusion that there may be many properties warranting serious consideration for prefeasibility and/or feasibility studies. Two-thirds of the number of properties in these two Departments are inactive. If the same ratio of inactive to total mines is applied to the 5,240 mines inventoried by GEOBOL in six Departments, more than 3,400 inactive mines may be considered for study.

Average costs per unit of work or production for exploration, development, and production in the Small Mining subsector are difficult to determine because of the wide disparity in operating conditions due to location and characteristics of the deposit being mined, meager resources available to the operators, and the lack of systematic records of operations. On the basis of whatever information that could be gathered, the Ministry compiled the following estimated costs in 1976:

Table 18.--A. Estimated costs of production, Small Mining subsector, 1975.

Commodity

Antimony

Grade, percent	50	55	60	65	70
Cost per gross unit, fine, \$U.S.	16.06	16.02	15.45	15.32	14.75

Tin

Grade, percent	10	20	30	35	40	45	50	60
Cost per pound, fine, \$U.S.	4.30	3.44	2.70	2.47	2.72	2.30	2.29	2.27

Wolfram

Grade, percent	55	60	65	70	75
Cost per gross unit, \$U.S.	80.98	81.05	81.05	81.11	81.10

Table 18.--Continued

H. Estimated cost of underground workings,
Small Mining subsector, 1975.

Type of excavation	Crosscut	Drift	Intermediate drift	Raise
Cost per meter, \$U.S.	54.93	59.53	33.93	26.96

Sources: Ministerio de Minería y Metalurgia, 1976, Informe No. 3 (1) Minería Chica
 " " " " " 1976b, v. 1., p. 107.

Estimated costs for exploratory drilling and underground work were estimated by the Ministry in 1976 to range from \$80 to \$90 per meter depending upon the stage of exploration in evaluating a deposit.

Productivity levels

The large mining subsector annually mined from 4.07 to 5.45 million tons of ore (all commodities) in the period 1972-1975. No ore production data are available for the medium and small mining subsectors. In lieu thereof, rough estimates may be derived on the basis of the following formula and data:

Table 19.--Estimation of ore production by Medium and Small Mining subsectors.

Formula:

(millions of metric tons)

$$\frac{\text{Large mine ore prod.}^{1/}}{\text{Percent of large mine exports to total exports}^{2/}} : \frac{\text{Medium mine ore prod.}}{\text{Percent of medium mine exports to total exports}^{2/}} : \frac{\text{Small mine ore prod.}}{\text{Percent of small mine exports to total exports}^{2/}}$$

Data

Mining subsectors

	<u>Mining subsectors</u>		
	<u>Large</u>	<u>Medium</u>	<u>Small</u>
1972	$\frac{4.35}{64.2}$	$\frac{1.47}{21.7}$	$\frac{0.96}{14.1}$
1973	$\frac{4.07}{64.4}$	$\frac{1.59}{25.2}$	$\frac{0.66}{10.4}$
1974	$\frac{5.02}{64.4}$	$\frac{1.81}{23.2}$	$\frac{0.97}{12.4}$
1975	$\frac{5.45}{70.2}$	$\frac{1.76}{22.7}$	$\frac{0.55}{7.1}$

Table 19.--Continued

<u>Summary, production</u>	<u>Large</u>	<u>Medium</u>	<u>Small</u>
1972	4.35	1.47	0.96
1973	4.07	1.59	0.66
1974	5.02	1.81	0.97
1975	5.45	1.76	0.55

1/ Amembassy, La Paz, 1975 and 1976, pages 10 in both reports.

2/ Table 6, page 20 this report.

These estimates depend entirely upon a ratio derived from the performance of the large mining subsector, and may not be wholly applicable to the situation in the other mining subsectors.

Mines in the medium mining subsector may be more efficiently operated, in which case actual ore production may be less than the calculations suggest. The situation in the small mining subsector is too variable to be objectively evaluated. Production in many of the small mines is very low, and few mines attain even modest levels of production.

On the basis of the number of underground and surface workers reported in the three mining subsectors, productivity per daily man shift in 1975 as estimated in the following table was about 0.97 ton in the large mine subsector, 0.76 ton in the medium mines, and 0.09 ton in the small mines.

Table 20.--Average production of mine ore per worker, surface and underground.

<u>Mining subsector</u>	<u>1975 mine production (million tons)^{1/}</u>	<u>Total underground and surface labor force (thousands)</u>	<u>Average production per worker (tons)</u>	
			<u>Annual</u>	<u>Daily^{2/}</u>
Large	5.45	18.041 ^{3/}	302	0.97
Medium	1.76	7.46 ^{4/}	236	0.76
Small	0.55	20.0 ^{5/}	27.5	0.09

1/ See preceding table.

2/ Estimated on basis of 310 working days per year.

3/ Amembassy, La Paz, 1975, p. 17

4/ Ministerio de Minería y Metalurgia, 1976, p. 33

5/ Estimated from range of 15,00 to 25,000 (HIID, I-11). Cooperatives employ an additional 16,000 workers (HIID, II-21).

Data also are fragmentary for estimating the productivity per-man-day-shift for underground labor, but the few available statistics analyzed below suggest average daily underground mine production per man in 1975 was about 2.0 tons in the large mines, 1.3 tons in the medium mines, and 0.15 ton in the small mines.

Table 21 .--Average production of mine ore per worker, underground.

<u>Mining subsector</u>	1975 mine production (million tons) ^{1/}	<u>Underground labor force</u>	Average production per underground worker (tons)	
			<u>Annual</u>	<u>Daily</u> ^{2/}
Large	5.45	8,889 ^{3/}	613	2.0
Medium	1.76	4,500 ^{4/}	391	1.30
Small	0.55	12,000 ^{4/}	46	0.15

1/ See Table 19.

2/ Estimated on basis of 310 working days per year.

3/ Amembassy, La Paz, 1976, p. 17.

4/ Estimated to be 60 percent, of total labor force.

The slight advantage in average daily production per worker in the large mine subsector over the medium mine subsector (2.0 tons vs. 1.30 tons) may be due in large part to the fact that about a third of COMIBOL's recent mine output resulted from the block cave system of mining used in one mine (Siglo XX). This system of mining should yield about 30 tons per man shift but obviously did not do so there. However, the average yield at Siglo XX no doubt was greater than that attained in the other mines, and helped the subsector attain the productivity level shown in the above analysis.

Productivity levels per man shift in 10 to 16 mines operating in the United States on vein deposits similar to those commonly developed in Bolivia were reported recently as follows:

Table 22.--Productivity levels in mines in the United States.

	<u>Tons per man shift</u>			<u>Mines Reporting</u>
	<u>Median</u>	<u>High</u>	<u>Low</u>	
Cut and fill stoping	11.5	27.5	3.85	14
Cut and fill, total mine	4.9	10.8	1.90	15
Shrinkage stoping	25.2	46.2	7.2	10
Shrinkage, total mine	8.0	21.0	3.0	10

Source: Wimpfen, Sheldon P., 1973, table 31-29, p. 31-24.

The term 'stopping' noted above refers to underground operations employing workers for the specified type of mining. The term 'total mine' includes the entire mining operation, which requires both underground and surface workers.

The low productivity levels in the Bolivian mines compared to levels achieved in the U.S. mines reported in the above table are due to many factors, such as adverse working conditions in the mines, inexperience, and lack of training for specialized skills, inefficient management, and equipment deficiencies. These have been discussed in recent reports on the mining situation in Bolivia.

EXPLORATION SITUATION

Rules and regulations for prospecting, exploration, mining, and treatment

All mineral substances in Bolivia are under the dominion of the State by virtue of the Code of Mines promulgated May 7, 1965 (copy in Appendix). Petroleum and other hydrocarbons are exempt from the regulations of this Code and are subject to special laws. Natural-occurring superficial deposits, such as salt, are also under the dominion of the State, but unlike the situation for other minerals, the owner of the land has priority for concessions.

The right to conduct aerial surveys, prospect, explore, exploit, treat or smelt mineral substances is granted as concessions by the State. As mentioned previously, the national mining industry comprises the State and private mining subsectors. To assure proprietorship rights to sufficient mineral and land resources for the State mining industry, certain mining areas are established as fiscal reserves. Special legal provisions apply to exploitation and treatment of mineral substances existing in these reserve zones. Private mining activities are not permitted in these zones except by special authorization.

Aerial reconnaissance surveys are authorized through issuance of licenses following approval of applications by the technical divisions of the Government and issuance of a Supreme Resolution.

Any person may prospect on free land (land not included in previously established reserve or concession areas), but must obtain exploration and/or exploitation concessions in order to conduct exploration or mining operations.

A petitioner for an exploration concession must submit an application to the superintendent of mines, the prefect, or the subprefect of the jurisdiction in which the property is located. Upon satisfying the application requirements, a concession is issued by the State which grants exclusive right to explore for minerals in designated areas not otherwise included in a previously granted concession or reserve.

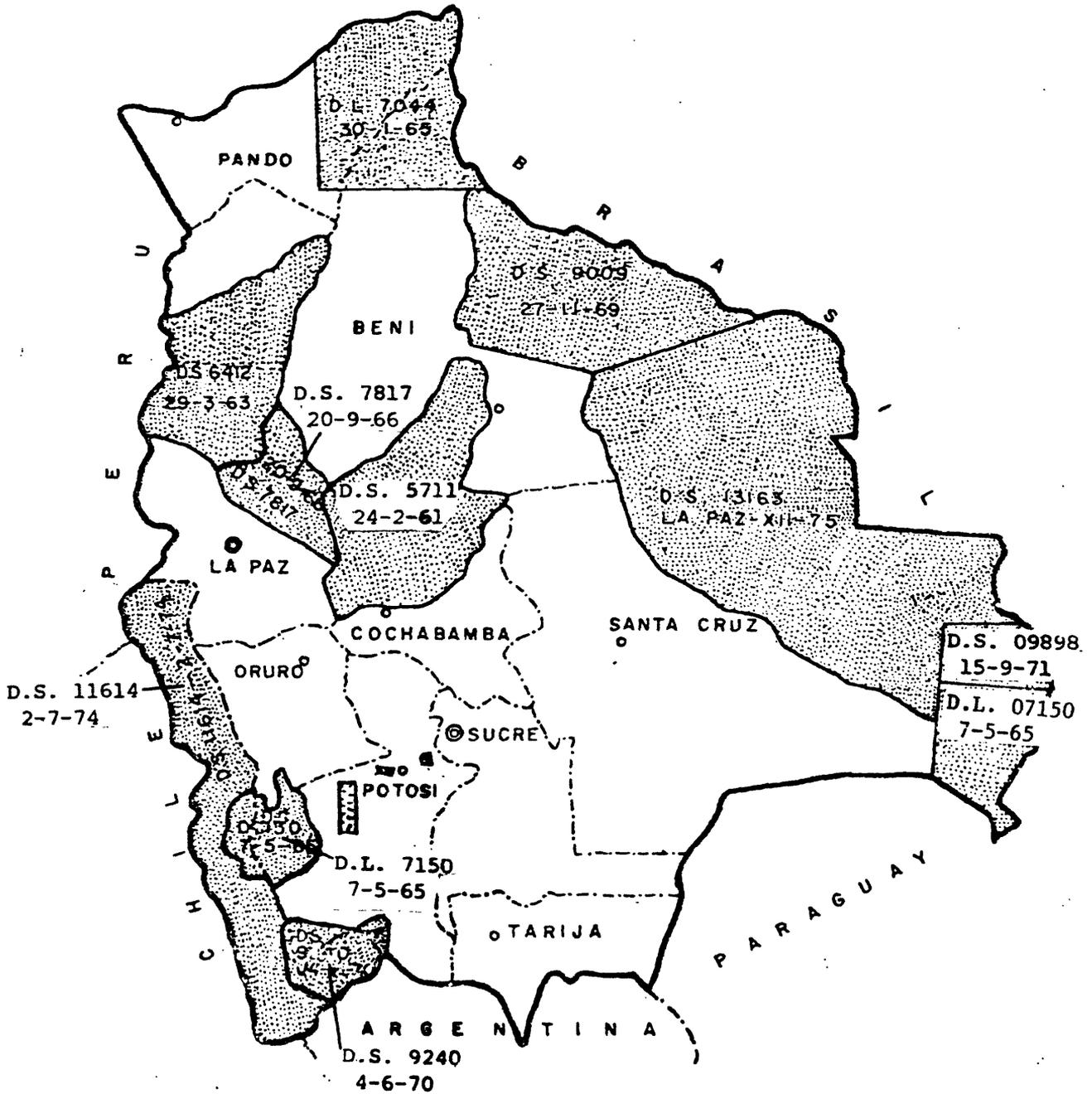
An exploration concession may include 2 to 20,000 parcels or claims of land, referred to as pertenencias, with each parcel, ideally a square, measuring 100 meters per side. Concessions are granted for a period of two years, and require payment of a patent fee equal to one-half of the fee for an exploitation patent. Extension of a concession for one year is possible, but the initial area must be reduced to one-half its original size, and another patent fee must be paid. The grantee has the exclusive option to obtain exploitation concessions within the exploration area.

An "exploitation concession gives the grantee the real and exclusive right to exploit, treat, smelt, and indefinitely profit by the mineral substances he may obtain within the perimeter of his concession, . . ." The total area allowed for each direct exploitation grantee is not to exceed 20,000 pertenencias. The scale of annual patent fees required for these concessions is as follows:

<u>No. of pertenencias</u>	<u>Fee per pertenencia Bolivian pesos</u>
Up to 5,000	1.20
" " 10,000	2.40
" " 15,000	3.60
" " 20,000	4.80
Over 20,000 <u>1/</u>	6.00

1/ Applicable to multiple grantee ownership situations.

BOLIVIA



Source: Ministerio de Minería y Metalurgia, written communication, July 22, 1971

Figure 6.--Areas of fiscal reserves

Royalties and taxes apply to all concessions in addition to the patent fees.

Abandoned dumps, slags and tailings within an exploitation concession area are considered accessory property, and separate rights to exploit them are issued "by the Superintendent of Mines to whoever may first solicit them." These rights do not include the rights to exploit mineral deposits either on the surface or the subsoil. Annual patent fees equal to those established for exploitation concessions apply.

Rights to install mineral treatment plants are granted by the Ministry of Mines. Land belonging to the State required for the plants is granted free of charge. Private smelting plants may be established by authority of the Ministry of Mines and subject to favorable reports from the National Smelting Corporation assuring satisfactory integration of such plants into the national mining industry.

Certain areas, designated as 'fiscal reserves,' are established by the government for the purpose of assuring COMIBOL rights to sufficient mineral and land resources for its operations. These include a zone 5 kilometers wide surrounding each of the COMIBOL properties. Private mining activities under provisions of exploration and exploitation concessions are permitted in fiscal reserves only by special authorization. The privileged status of fiscal reserves has no predetermined time limit.

Participation in mineral development projects in fiscal reserves by foreign interests was authorized by Decree Law 1099 dated July 26, 1973, whereby nationals or foreigners may be granted concessions to explore and exploit gold and other mineral deposits in the national reserve area. Grantees may export 50 percent of the gold production after first deducting the royalty due the government.

The total area of fiscal reserves and exploration concessions in force represent about one third of the total land area of Bolivia. (See fig. 6.) Situations where fiscal reserves and concessions overlap mineral belts and zones pose administrative problems in deciding priorities for developing mineral discoveries, and limit the area of favorable ground open to general prospecting and exploration.

As of July 1976, the following exploration concessions were in effect:

1. A project (D.S. 11614, dated July 2, 1974) to investigate two areas in the Departments of Cochabamba and La Paz. The UN, COMIBOL, and GEOBOL are financing the project at levels of \$350,000, \$300,000, and \$100,000, respectively.

2. Joint contract (D.S. 9240, dated June 4, 1970) between COBOEN (Bolivian Nuclear Commission) and Y La Compania AGIP S.P.A. (Italian interests) to explore certain areas in the southern portion of the Department of Potosi. AGIP furnishes all equipment and personnel and makes all investigations, COBOEN coordinates the work.

3. Exploration of a selected area in the northern portion of the Department of La Paz north of the Matilde mine. Funded for a total of \$800,000 by: COMIBOL, \$350,000; UNDP, \$100,000; GEOBOL, \$350,000. Work is to consist of geochemical and geophysical investigations and drilling to test anomalies of interest.

4. Apolo project--investigation by West German interests of an area 180 km. north of La Paz for base metals and gold. Total cost of the 30-month project will be \$2 million.

5. Investigacion Del Precambrico--joint project by GEOBOL and Institute of Geological Science, London (IGS) to explore the Precambrian Shield area near the border with Brazil. The estimated time to complete the project is five years, at a total estimated cost of \$4,350,000 including an assistance grant of \$2,791,000 from IGS.

Contracting firms in Bolivia

Foreign contractors in Bolivia usually are well equipped and staffed to undertake any mineral exploration work for which they are engaged by the private sector or by COMIBOL.

The capabilities of the Bolivian contractors listed below have not been evaluated, but few of them are able to conduct all types of work associated with exploration programs. Hopefully, as exploration activities increase, domestic firms will become better equipped and qualified to conduct a greater share of the exploration work in Bolivia than they are capable of doing at present. Two problems confront domestic firms: difficulty in obtaining equipment and supplies from abroad, and shortage of Bolivian professional and skilled personnel.

Private sector

Exploration in Bolivia by the private sector has been negligible in recent years. Officials of the Small Miners Association acknowledge that exploration is lacking in this subsector, and explain that the main cause is the lack of funds for this type of activity. They report that records of operating costs are not maintained, and that they cannot afford equipment and personnel for exploration work. If successful exploration projects were demonstrated in these mines (referring to exploration work by GEOBOL

Table 23.--Bolivian contracting firms offering mineral exploration services

<u>Name</u>	<u>Services offered</u>
1. Analytical Laboratories of Marlene Schuler	Chemical and geochemical analysis.
2. Louis Astudillos	Geological and mining consultant.
3. GEMCO	Geological, economic and mining studies.
4. GEO CONSULT	Consulting on geological engineering, geology and mining.
5. GEO-EXPLORACION	Geological, geophysical, and geochemical exploration.
6. Geologia y Prospeccion	Consultants
7. Tom Heard - SOMCO	Mining consultant
8. IPA (Ingenieria Politecnica Americana)	Diamond drilling
9. Prudencio (Geotec)	Drilling?
10. SERMIN (EMUSA)	All types of exploration work including drilling.

in its prefeasibility studies which will be explained later), individual mine operators may be interested in offering their mines for exploration by GEOBOL or similar organizations.

In the medium mine subsector, modest exploration programs may be conducted in the larger mines of the group, but in general exploration activity is minimal. The reasons cited for this situation are the lack of risk capital for mining ventures, and the opportunity for more attractive investments in other enterprises. Contributing to this development are high costs of production and supplies, and tax and royalty costs which are considered by the mine operators to be excessively high.

In lieu of undertaking exploration projects to maintain or expand reserves, some operators of medium mines acquire small mines which offer development possibilities.

The Medium Mine subsector would favor a loan program which would offer loans to miners through BAMIN, and believes a board of directors should administer the fund with representatives assigned from BAMIN, GEOBOL, and each of the mining subsectors. Technical service for such a fund should be furnished by GEOBOL.

Public sector

A modest level of exploration is conducted in the large mine sub-sector, but the consensus is that reserves actually are decreasing rather than increasing. If economic obstacles to a vigorous exploration effort could be overcome, significant discoveries could be expected in this subsector because of the opportunity to explore the fiscal reserve area surrounding each of the large mines.

GEOBOL is the major organization gathering information of most value for prospecting and exploration in Bolivia. Its ongoing regional, district, and topical investigations are acquiring basic knowledge of the mineral resources of the country through geologic mapping, geophysical and geochemical studies, satellite imagery and aerial photography, and actual physical exploration.

Of particular value in helping to define anomalous target areas in hitherto unmapped or unexplored areas are the studies by the Landsat (ERTS)-Skylab Project in the Division of Natural Resources in GEOBOL. A dedicated staff under skilled leadership is applying advanced techniques and methods to identify specific structures as possible exploration targets. For example, three areas of particular interest may be cited. A Landsat image covering an area near Potosi reveals two lineaments--one west-trending, the other north-trending--which may be important to the concentration of mineral deposits in this highly mineralized district. In the Amazon Basin region northeast of La Paz, surface configurations resembling broad deltas suggest possibilities for the occurrence of extensive placer deposits. A previously uncharted mountain range is revealed by ERTS imagery of the area northeast of the Muton iron-bearing district in the Department of Santa Cruz. None of these are specific targets for immediate exploration until checked in the field, but they indicate prospective areas of interest much as the traditional prospector locates areas worthy of exploration work.

Prefeasibility project

The most active and promising exploration program in the public sector is the "prefeasibility project" conducted by GEOBOL's Small Mines and Resources Inventory unit (Programas de La Inventariacion de Recursos Minerales de La Minería Chica).

This program is operating with equipment and supplies acquired at a cost of \$US 850,000 granted to GEOBOL under a Project Agreement between International Development Association (World Bank) and BISA, Credit No. 455 B O, January 18, 1974. Under Article III, Part B of the Agreement, GEOBOL has a number of responsibilities of which one is "to select mines (in the small mine subsector) with the best potential and to provide technical and exploration assistance to their owners;" Under Part C(c), the Ministry of

Mining and Metallurgy is responsible for "a study of the feasibility of establishing a mineral resource exploration fund in Bolivia," which is the purpose of this report.

The prefeasibility project is providing technical and exploration assistance to small mine owners, as required by Part B of the Agreement, and is investigating two groups of study areas--designated as Type A and Type B. The same criteria were used to select the areas. Because of staff limitations only four areas could be studied initially, and these were designated Type A. A rough yardstick of the possible cost of each study was used--an investment of plus \$US 500,000 for a Type A area (includes diamond drilling), and up to \$US 500,000 for a Type B area (no diamond drilling included).

Some 30 criteria were used to select study areas which would be most likely to develop producing mines if geologic studies and exploration work were done. Among the information sources, criteria, and factors considered were: favorable information in reports and data already on hand; recommendations of engineers, geologists, and mining personnel familiar with the proposed study area; past production record and regularity of production; present infrastructure; density of mines; potential based on known geology; and availability of regional concentrator. A quick field check of possible study areas helped in the selection.

A staff of about 50 geologists, mining engineers, geophysicists, geochemists, and supporting technicians was available for this project. Personnel were assigned to ten areas with priority granted to the four areas listed below which were judged to be the most promising for future development.

Table 24.--Initial prefeasibility study areas.

<u>Name</u>	<u>Location</u>	<u>Principal commodity</u>
La Salvadora	85 km. NE of Oruro	Antimony
Maria Teresa	15-20 km. east of Lake Poopo	Tin
Tuntuco	100 km. SE of Potosi	Zinc
Porvenir	60 km. SE of Oruro	Tin

The study areas range in size from 5 to 8 square kilometers. Each study includes topographic and geologic surface mapping, geophysical and possibly geochemical surveys, and underground geologic mapping. Map scales range from 1:2,000 for surface mapping and 1:500 for more detailed mapping. The completed maps indicate exploration targets which are tested later by diamond drilling and/or crosscutting, drifting, or raising.

Each study project, including the final report, is completed in about 45 days. Exploration work then follows based on recommendations in the report.

The funds (\$850,000) granted to GEOBOL under the current Project Agreement with the World Bank have been used to upgrade or replace existing equipment, and to obtain new equipment not previously available to the staff. Grant funds have been expended on items in the following general categories in the approximate percentages noted:

Table 25.--Distribution of grant funds for prefeasibility studies.

	<u>Percent</u>
Diamond drilling equipment	53
Field equipment and supplies	16
Vehicles	16
Communications equipment	7
Computer and supplies	6
Laboratory equipment and supplies	2

A budget for the prefeasibility project for the 5-year period, 1975-80, has been estimated as follows:

	<u>Annual</u>	<u>5-year</u>
Salaries and field expenses	US \$350,000	US \$1,750,000
Operating expenses	350,000	1,750,000
Equipment and supplies	<u>500,000</u>	<u>2,500,000</u>
Total	\$1,200,000	\$6,000,000

Ideally, completed prefeasibility studies disclosing geologic targets worthy of additional exploration and development should be followed by feasibility studies. Favorable results from these would justify loans to prepare mines for production. As there is little, if any, private risk capital available for such ventures, either exploration or development, mine operators have no alternatives at present but to seek funds in the public sector. A proposed loan to BAMIN from the World Bank is under consideration for on-lending to mines in the small mines subsector for mine development, and possibly for feasibility studies. The basis for

the loans to the small mines would be the Type A, Type B prefeasibility studies. Feasibility studies with further exploration work, probably, but not necessarily, would be prepared by the Inventory of Small Mines unit of GEOBOL.

PROGRAMS IN OTHER COUNTRIES OFFERING ASSISTANCE FOR MINERALS EXPLORATION

Other countries have developed and operated programs to encourage minerals discovery and development. These range from training programs for prospectors to government-funded ventures intended to discover, develop, and, in some instances, operate mines. All programs have the same purpose--to encourage exploration which, if successful, may expand mineral production. Most are joint venture programs in which the government shares with the participating private sector in the risks and costs of exploration. All exploration loan programs include provisions for repayment of government funds expended. Some are liberal, others are strict in the terms of repayment. Available copies of enabling legislation or program regulations are included in the Appendix to this report to serve as reference material in designing and planning a program for Bolivia.

No individual program among those described in the following pages may be entirely desirable or feasible for adoption in Bolivia, but certain features in some are worthy of consideration for the proposed Mineral Exploration Fund.

The programs for which some information was available are either currently active or have been active in the past 15 to 20 years in Canada, Great Britain, Japan, and the United States. A United Nations-sponsored program also is described. Programs supported by other nations such as France and West Germany are not included because information was not readily available for review. The omission is not intentional or an oversight.

Canada

Prospectors' Assistance Act--British Columbia

The Province of British Columbia, Canada, under the Prospectors' Assistance Act has provided grubstake grants since 1943 ranging from \$1,000 to 4,000 per year to qualified prospectors (individuals, not corporations) to prospect and explore for minerals in the Province. The amount granted to each individual depends on the nature and extent of the program conducted but does not exceed \$4,000 in any one year. About \$1.2 million had been expended on grants to nearly 2,000 prospectors in the period 1943 through 1975.

Additional funds may be granted as bonuses in the amount of 1) \$1,000 when a detailed geological, geochemical, or geophysical survey is conducted on a mineral property, and 2) up to \$20,000 for diamond drilling on the basis of 50 cents per foot up to 2,000 feet and 25 cents per foot thereafter.

During the 1975 field season, 188 prospectors were grub-staked at a cost of approximately \$228,200. In 1976, about 63 prospectors received grants totalling about \$125,000. The decline may be due in part to uncertainty about the policy of a new provincial government on problems affecting the prospector.

Anyone not having experience, training, and understanding of prospecting sufficient to qualify for assistance under the Act, may apply for a grant to attend one of the prospectors' training courses which are held annually at suitable locations throughout the Province. About 250 persons attended such courses in 1974, and about 600 attended in 1976. The Act also provides for additional instruction and on-site guidance to prospectors in the field.

For the 1977 season, consideration is being given to issuing about 100 grants distributed among three categories of approved applicants:

1. \$2,000 for 45 days work by experienced prospectors,
2. \$1,000 for 25 days work by novice prospectors, or
3. \$1,000 for 45 days work by novice prospectors with experienced prospectors.

Prospecting and Mining School

The British Columbia & Yukon Chamber of Mines in 1976-1977 conducted its 58th annual night school series of prospectors' training classes. Part I of the series is a general interest introductory course in mineralogy, geology, mining, and prospecting. Further instruction in the art of practical prospecting is given in Part II. Classes meet twice weekly from early October through February. Students pay \$20 for the 20 lectures and one field trip in Part I, and \$15 for the 10 lectures in Part 2. Additional expenses total about \$15 for the purchase of a textbook, mineral-rock set, and magnifying glass. Instruction is given by staff members of the University of British Columbia, mining companies, the B.C. Department of Mines and Petroleum Resources, consultants, and legal experts.

Northern Mineral Exploration Assistance Program

The Northern Mineral Exploration Assistance Program, Oil and Mineral Division, Development Branch, Department of Indian Affairs and Northern Development, Yukon and Northwest Territories, Ottawa, Canada, in the period

1966 to December 1975, offered assistance up to a maximum of 40 percent of an applicant's approved exploration expenditures. The Minister of Indian and Northern Affairs announced on December 23, 1975, that the program will not receive additional funding in 1976-1977 owing to budgetary restraints.

The program provides for interim payment to the applicant of 75 percent of the total grant owing at the conclusion of the exploration work with the balance paid after audit; for projects of long duration, payments may be made more often. Applicant's administrative costs are limited to not more than 10 percent of direct program expenditures, and none of the applicant's administrative costs are allowed if the applicant has contracted out the complete exploration program. Expenditures incurred prior to or after the stated period of the program are not eligible for assistance unless they are advance or belated payment for goods or services used during the exploration period.

Repayment is required if the project results in the discovery of an economic ore body, and production for gain commences on the property. When production has started, the applicant is required to repay the full amount of the loan with interest by either:

- 1) Installment payments,
- 2) One cash payment,
- 3) Issuance to the Government of fully paid common shares in the company, or
- 4) Any combination of the above.

The requirement for repayment may be waived should production cease. Interest is charged at the rate of two percent plus the average of interest rates on long term Government of Canada bonds outstanding during the calendar year next preceeding the calendar year in which the amount becomes owing.

Prospector's Assistance Act, Yukon and Northwest Territories

This program offers assistance up to \$900 per year, distributed as follows:

Food, rental of equipment, and purchase of expendable items	\$350.00
Prospector's traveling expenses	550.00

Up to two-thirds of approved assistance may be given in advance of expenditure.

No information on the success or short-comings of this program was available for review.

Quebec Mining Exploration Company (SOQUEM)

A stock company chartered in 1965 under Act 13-14, Elizabeth II, chapter 36, by the provincial government of Quebec, Canada, SOQUEM has the overall objective to become a holding company managing mining interests and reinvesting profits into exploration. Its specific objectives are:

- (a) to carry out mining exploration by all methods;
- (b) to participate in the development of discoveries, including those made by others, with power to purchase and to sell properties at various stages of development, and to associate itself with others for such purposes;
- (c) to participate in the bringing into production of mineral deposits, either by selling them outright or transferring them in return for a participation.

The initially authorized capital of the company was \$15 million. This has been increased to \$45 million, and the stock subscription period of 10 years has been extended by 5 years to December 31, 1980. Its total capitalization is, or will be, totally subscribed by the Minister of Finance out of the consolidated revenue fund of the Province, and as a joint-stock company is governed by the Quebec Companies Act.

SOQUEM does not expropriate, nationalize or simply take over existing properties. "It is not meant to be a public utilities monopoly, but a company that will take risks and could eventually make profits."

Lead time, the period of time between discovery and production, when all studies, development, and operating facilities are undertaken and completed, determines how soon royalty income may be expected. Small deposits usually can be developed and made productive in less time than is required to bring large deposits on stream, but the level of output is proportionately less, and the amount of royalty would be smaller than is expected from a large deposit.

It is unlikely that annual production from an individual mine which may receive exploration assistance from the proposed Minerals Exploration Fund in Bolivia would reach the \$30 million level shown in the analyses of the UNDP Revolving Fund program. Large operations, such as open pit, porphyry copper mines, probably are considered to be the principal source of royalties for the UNDP program if the projected income level is to be realized. Presently known deposits in Bolivia are not of the size likely to yield a similar level of income.

In the financial report by SOQUEM for the fiscal year ending March 31, 1976, the economic prospects for the Quebec taxpayer resulting from SOQUEM operations were stated as follows:

Economic Prospects

The Québec taxpayer has the right to ask what return he will get for the \$24,5 million the Québec government has subscribed to the capital stock of SOQUEM over the past ten years, \$23,283 million of which had been committed by the end of the last fiscal year.

From 1966 to 1976 SOQUEM undertook about 225 *exploration* programs. Of these three have reached the *operation* stage: Louvem, Niobec and Somex; a fourth, the Seleine mine, has reached the stage of underground mining development prior to operation; 32 other programs are still in progress and involve mainly the search for mineral deposits; 189 have been abandoned because of negative results.

La Société Minière Louvem Inc. has produced income for SOQUEM since 1972; in a few years' time, Niobec Inc., which is now in operation, will

as well. In addition, salt production from the Rocher-aux-Dauphins deposit by Seleine Inc. is forthcoming. Consequently, on the basis of the known mineral reserves of the first two, and of the probable reserves of the third, the Board of Directors thought it would be useful to present the following chart on the income which SOQUEM can reasonably expect to earn from these three commercial enterprises.

Using as a base the economic factors and the parameters generally accepted by the industry, SOQUEM has compiled the following table of the present value of the profits which should be earned by the development of the three discoveries. To this should be added the mineral duties payable to the provincial government, in accordance with the law on taxation of mining operations.

Table

Estimate of net income, or cash flow (SOQUEM share), and mineral duties to be paid to the provincial treasury by Louvem, Seleine and Niobec

Period	Cash flow		Mineral duties to be paid	
	Estimated value ¹	Present value ²	Estimated value ¹	Present value ²
	\$000	\$000	\$000	\$000
1976 to 1980	(25,722) to (14,167)	(22,601) to (13,880)	4,231 to 4,246	3,455 to 3,468
1981 to 1985	58,934 to 76,381	30,199 to 39,676	5,384 to 8,690	2,754 to 4,308
1986 to 1990	54,021 to 78,959	17,497 to 25,258	10,741 to 16,993	3,468 to 5,348
1991 to 1995	47,289 to 82,125	9,464 to 16,321	11,181 to 22,250	2,224 to 4,427
1996 to 1999	41,886 to 66,304	5,409 to 8,588	10,259 to 18,860	1,322 to 2,443
Total:	176,408 to 289,602	39,968 to 75,963	41,796 to 71,039	13,223 to 19,994
Total:	Estimated value — cash flow and mineral duties		220,268 to 350,641	
Total:	Present value — cash flow and mineral duties		53,191 to 95,957	

Note (1) In the case of Seleine, two sales profiles have been used to calculate the cash flow and mineral duties. The first may be described as pessimistic, and the second as optimistic.

Note (2) The present value is determined by discounting profits at an annual interest rate of 10%.

Continued excerpt from SOQUEM financial report:

SOQUEM began receiving dividends on its research and development investments five years ago. At the end of the fiscal year, the cumulative value of the net assets of Louvem (\$4,929,200), investments in Niobec (\$2,743,337), and other assets amounted to \$9,191,751. Moreover, Louvem paid the provincial treasury

mineral duties in the amount of \$832,000. Combining these figures with those of the preceding table, the estimated return on the investment of the Québec taxpayer, expressed in present values, is as follows:

Table

	Pessimistic outlook \$000	Optimistic outlook \$000
Present value — cash flow and Louvem, Niobec and Seleine mineral duties	53,191	95,957
Net value of various assets accumulated up to present, or shareholder equity	9,192	9,192
Mineral duties paid by Louvem	832	832
Total:	63,215	105,981
Subtract:		
Subscription to capital stock	24,645	24,645
Estimated surplus	38,570	81,336
Estimated return	156%	330%

When evaluated this way, the returns from the three enterprises allow an estimate of anticipated surplus, at discounted value, of from \$38,570,000 to \$81,336,000. This surplus does not include eventual income from the sale of mining properties, nor the return on discoveries which may be made by SOQUEM in the years to come. For the provincial treasury, the fore-

casts should also include the direct and indirect economic gains, such as the purchase of equipment and material, jobs created, and the fallout from general economic involvement, particularly in the case of salt, which is the basis of the entire industrial economy.

Andrew J. Freyman, in an article published February 1975 in the Western Miner magazine, noted that SOQUEM was receiving "requests to provide advisory expertise in organizing, and running, exploration organizations in developing countries." The annual report for 1975-1976 stated that as a result of an agreement concluded in October 1975 with the Industrial and Mining Development Bank of Iran, SOQUEM had begun a cooperative plan with the Iranian Mining Fund to promote the mining industry in Iran. "Collaboration at this stage consists in providing the necessary services to organize the Fund and set it in motion. Once this stage is completed, the two companies will study the possibility of jointly undertaking mining investment projects in Iran, Canada and elsewhere in the world."

SOQUEM receives sustained annual financial funding from the provincial government and thus is assured of support to conduct a predetermined level of operations. It is free to initiate negotiations with private interests to investigate promising mining properties on a joint venture basis, and to proceed with any operation even into the production stage. Some companies consider that these advantages pose unfair economic competition to private ventures. For example, the management of St. Lawrence Columbian & Metals Corporation, which recently went into receivership, has inferred that it was subject to unfair competition from Niobec, Inc., a columbian operation, in which SOQUEM holds a 50 percent stock interest.

The initiatives open to SOQUEM in seeking exploration targets, negotiating programs with private companies, and joining in producing operations with companies are in contrast to the limitations imposed in the exploration programs conducted by the United States Government under the DMEA and OME programs.

Northern Roads Network program

A number of programs have been or are in effect to provide or improve access to mine properties.

Canada's Department of Indian Affairs and Northern Development in 1970 established a 10-year "Northern Roads Network Program" to facilitate resource development and communications in the Yukon and Northwest Territories. Resource roads built under the program are classified by one of the following designations for which the listed assistance is offered:

Tote trails.--Low standard roads to resource projects in the exploration or development stage. Financial assistance offered up to 50 percent of the construction cost but not to exceed \$20,000.

Initial access roads.--Same as tote trails but because of length, terrain or difficulty of construction total cost would exceed \$20,000. Federal assistance not to exceed 50 percent of actual road cost, with maximum yearly contribution limited to \$100,00 if the project is exploratory in nature, and to \$500,000 if primarily for development.

Permanent access roads.--Higher standard roads than above and providing permanent access from an existing permanent road to a resource project in the pre-production stage. Federal contribution of up to two-thirds of the cost of construction may be made but not exceeding 15 percent of actual capital invested by the company prior to commencement of commercial production or exploitation, or \$40,000 per mile, whichever is the lesser amount.

Resource airports

The Department of Indian Affairs and Northern Development announced in 1966 a program to assist in the construction of Resource Airports in the Yukon and Northwest Territories.

Exploratory airports.--Federal assistance to defray 50 percent of the cost of construction up to a maximum of \$20,000.

Preproduction airports.--Federal assistance to defray 50 percent of construction costs up to a maximum of \$100,000.

Roads and airports constructed with Federal funds involved are to be built on lands held by or relinquished to the federal government. These facilities are to be available for public use at all reasonable times.

Great Britain, Mineral Exploration and Investment Grants Act 1972

A financial assistance program for mineral exploration in Great Britain is operated by the Department of Trade and Industry under the Mineral Exploration and Investment Grants Act 1972. The following remarks on certain provisions in this program and in the OME program operated in the United States show interesting similarities and differences:

<u>Provisions</u>	<u>OME program</u>	<u>British program</u>
Eligible applicants	Restricted to small operators.	No restrictions but must be qualified to conduct the work or to employ contractors.
Limitation on amount of Gov't participation in single contract	\$250,000	None stated.
Eligible minerals	36 listed in General Provisions	Non-ferrous metals, fluorspar, barium minerals, and potash.
Interest rates on Government funds paid on contracts	Treasury interest rate in effect in month contract is executed. plus 2 percent. Simple interest.	Annual compound interest at rate of Public Works Loan Board annuity rate for a 10-15-year loan in force when individual Federal payments are made on a contract plus 1/2 percent. When accumulated interest totals 20 percent of the value of the individual Gov't payments, further liability for additional interest on those payments ceases

<u>Provisions</u>	<u>OME program</u>	<u>British program</u>
Repayment by Operator	5 percent royalty on gross proceeds of production until repaid in full with interest, or until the end of the royalty period, usually 10 years from date of certified contract, whichever occurs first. If contract is not certified, no repayment required after date of notice that certification will not be made.	Repayment in full with interest due if production begins within 12 years after last payment by the Government; or by installments beginning within 18 months of start of commercial production and annually thereafter until repaid in full with interest. No repayment required if project is unsuccessful.
Modifications to repayment liability	Seldom changed from original contract terms.	If the value of minerals found does not justify considering the project an unqualified success, but some values are present, the repayment liability may be modified.
Percent of Government	50, 62 1/2, and 75 percent.	35 percent.
Eligible work	Exploration and evaluation (development) type work.	Exploration, mineral processing and metal extraction assessments including pilot plant operations.
Date work is first eligible for Government reimbursement	Date that contract is executed.	Gov't may reimburse for work done between date application received and date decision is made to approve for contract. Not applicable for denied applications.
Frequency of Government payments	Usually paid on monthly basis for approved work completed in preceding month.	Not more often than seimannually.
Ownership of information derived from project	Considered company confidential. Not released without Operator's or successor's permission.	Property of Government and may be published if: 1. Company defaults on contract. 2. The project is unsuccessful and 2 years have elapsed since Gov't released Operator from repayment liability.

Provisions

OME program

British program

		3. 12 years have elapsed since last payment of Gov't contribution, unless the department is satisfied that minerals in the area have been adequately developed. Above provisions not applicable if Operator repays contribution and interest in full.
Environmental aspects	Work is planned to keep potential harm to the environment at a minimum.	Land use activities are controlled under Town and Country Planning Acts. Local planning authorities are responsible for deciding whether or not planning permission is required for a specific land use such as mineral exploration.

Japan, Metallic Minerals Exploration Agency

The Metallic Minerals Exploration Agency of Japan (1964) succeeded an agency which was established May 20, 1963, under Law No. 78, 1963 and amended in 1964 and 1966.

The Agency provides loans to Japanese enterprises to explore metallic mineral deposits, conducts geological investigations to define exploration targets, guarantees loans for exploration projects, collects and offers data regarding metallic mineral resources, maintains a center for collecting data and information on exploration and development of mineral resources and operates a geological survey research vessel for submarine mineral resources investigations. In 1968, funds were authorized for exploration abroad by Japanese mining companies, and for guarantees of liabilities incurred abroad. A special financing system providing for "repay on your success" was introduced in 1972 to promote exploration abroad for uranium ore. Since 1970, the Agency has conducted cooperative geological surveys in developing countries, and in 1971, conducted surveys of cooperative regional development plans, mainly of natural resources, in the regions of developing countries where Japanese enterprises were exploring nonferrous mineral deposits.

From an initial capital of Y200 million in FY 1963, the Agency had grown to a total capitalization of Y6,900 million by the end of March 1973.

Individual applicants for loans for domestic projects must employ more than 1,000 full-time workers, and companies must be capitalized at Y50 million or more and employ more than 1,000 full-time workers.

Mineral commodities eligible for financial assistance are copper, zinc, lead, manganese, and copper ores.

Interest is charged at the rate of 7 1/2 percent per annum.

Loans are to be repaid within 6 years including one year deferment. In special cases, the term may be extended to 10 years with one year deferment.

In the 9 years from FY 1963 through 1971, loans had been made to 15 companies (152 mines) for prospecting and exploration work at a total cost of Y64,100 million, of which 52.6 percent was the Government's share.

Regional geological surveys in 27 districts were conducted by the Agency in the period, FY 1966-1972, at a total cost of Y2,359,816,000. These were the first-stage activities of a 10-year program which accelerates prospecting for domestic base metal resources by mining companies. In addition, Y40,429,000 were expended in basic geological surveys of two gold-silver mining districts.

Following these regional surveys, detailed geological exploration projects were conducted in target areas by core drilling, geophysical surveys, and exploration tunnels. Costs for this work were shared 60 percent by the Government, 20 percent by the mining companies concerned, and 20 percent by prefectural governments. In fiscal year 1972, total expenses were Y935,915,000 of which the Government's subsidy was Y561,549,000.

Loans are available to Japanese metal mining companies who explore ore deposits abroad and to companies supplying funds for metallic minerals exploration by other Japanese or foreign companies.

Bauxite, chrome, and the ores of copper, lead, zinc, manganese, uranium, and nickel are eligible for financial assistance.

Loans may be used "to cover exploration expenditures and investments to obtain concessions or options of exploration."

The Agency is limited to loan up to 50 percent of exploration expenditures, but this may be increased to 70 percent in special circumstances.

Interest is charged at no less than 6.5 percent per annum.

Repayment is required within 10 years including a deferment of one year.

Under its Guarantee of Liabilities project for overseas development of metal mines, the Agency provides funds to banks and other financial institutions for eligible liabilities to develop copper, lead, zinc, manganese, uranium, bauxite, and chrome ores. The Agency may guarantee up to 80 percent of individual liabilities for which an annual fee of 0.4 percent is charged.

United Nations Development Programme
Revolving Fund for Natural Resources Exploration

The Revolving Fund (the Fund) for Natural Resources Exploration was created by the Governing Council of the United Nations Development Programme (UNDP) at its twentieth session, 490th meeting in June 1975 (DP/53Rev. 1 and Corr. 1 in Appendix). Established as a trust fund by the General Assembly and placed in charge of the Secretary-General, the Fund is administered by the UNDP through a director appointed by the Governing Council. The Council will govern the Fund for the first 4 years at the end of which the Economic and Social Council will review the functions, institutional arrangements, and repayment system of the Fund, and recommend to the General Assembly such changes and improvements as may be necessary. Funds totalling about \$6 million have been contributed to the Fund (Japan about \$4.5 million, and the Netherlands \$1.5 million), and two projects, one in Bolivia and one in Sudan, have been approved.

The Fund is to be used in developing countries and will be financed by voluntary contributions from member nations. Preliminary estimates suggest that an initial program of about 10 projects, with new projects coming in at the rate of 15 to 20 per year, could be started if contributions totalled about \$7.7 million in the first 2 years, and increased to about \$18 million in the third and fourth years combined. The program might level off in 7 or 8 years at about \$12 million involving some 20 new projects per year.

The revolving aspect of the Fund relies on sufficient repayments (Replenishment Contributions) being received as royalties on production from successful projects. A royalty of 2 percent of the value of produced commodities will be assessed for a period of not more than 15 years of active production within a period of 30 years, with the total repayment limited to 15 times the original investment by the Fund. Terms may be modified if factors warrant. Governments requesting projects will be required to assume an obligation to make Replenishment Contributions to the Fund only for successful projects when the resulting mines come into production, and at rates based on the value of production, limited in time.

Exploration activities under the Fund will be phased or staged so that the results of work as it is completed will determine whether or not to continue with a project, and what future course of action offers the most promise if work is to continue. Thus, under the pre-feasibility phase, activities would include the following sequence:

Preliminary activities--evaluating data provided by the applicant country, and field checking areas proposed for exploration.

Technical reconnaissance--defining targets for detailed prospecting by "using photo-geological, geochemical, geophysical, and other techniques."

Detailed evaluation--"large-scale mapping of the targets, detailed geochemical and geophysical investigation, trenching, pitting and prospect drilling to limited depths to outline geological structure in depth, and as far as possible to obtain information on the order of magnitude of tonnages and grades of possible ore bodies." Limited beneficiation tests and preliminary studies of infrastructure, marketing, profitability, etc., may be included.

A project could be started in any one of the activities.

If the results of pre-feasibility activities are favorable, feasibility studies would follow. Such studies normally require large expenditures which the Fund is unlikely to be able to support in the initial years of funding as presently envisaged.

The UNDP reports its studies suggest that "there is a very high degree of probability that the Fund would reach revolving status (that is be self-supporting) within a period of less than 25 years."

UNDP forecasts are based on optimistic aspirations for the Fund, and on favorable factors assumed in the calculations. Critical to the success of the program are an annual level of funding adequate to support selected exploration projects, a favorable rate of discovery, lead time of sufficient duration to complete exploration and development work, and a significant level of annual revenue from each successful project to sustain future operations of the Fund. Contributions to the Fund would be its sole support until royalty income, termed "Replenishment Contributions" by UNDP, is realized from the successful projects. In the following Discounted Cash Flow (DCF) analysis, obligations totalling \$63 million are shown through the first seven years of the program. Whether contributions by member nations in the UN would be forthcoming in sufficient amounts to sustain the program prior to receipt of Replenishment Contribution is uncertain.

The UNDP suggests that one in ten projects may result in a discovery and future production. The prefeasibility studies program by GEOBOL may result in a more favorable discovery rate on subsequent exploration projects because of a critical screening of prospective project areas, and the thorough investigations being made of the selected areas.

Assumptions and estimates for discounted cash flow analyses:

1 of 10 projects is a discovery.

Assume a discovery in Year 1.

6 years from discovery to production.

Production value at Year 6 metal prices plus increase of 5 percent per year.

Table 26 .--Forecast of UNDP Revolving Fund operations
assuming \$30 million annual value of mine
production, and:

A.--Two percent royalty on production

Years of operation	No. of new projects	Total obligations.		Balance	Present Value @ 10%	Cumulative Present Value (millions \$)
		for new projects	Expected royalties (millions \$)			
1	10	6.0	--	-6.00	-6.00	-6.00
2	12	7.2	--	-7.20	-6.55	-12.55
3	13	7.8	--	-7.80	-6.45	-18.99
4	15	9.0	--	-9.00	-6.76	-25.75
5	17	10.2	--	-10.20	-6.97	-32.72
6	18	10.8	--	-10.80	-6.71	-39.43
7	20	12.0	0.60	-11.40	-6.44	-45.86
8	20	12.0	1.39	-10.61	-5.45	-51.31
9	20	12.0	2.32	-9.68	-4.52	-55.83
10	20	12.0	3.47	-8.53	-3.62	-59.44
11	20	12.0	4.89	-7.11	-2.74	-62.18
12	20	12.0	6.51	-5.49	-1.92	-64.11
13	20	12.0	8.44	-3.56	-1.13	-65.24
14	20	12.0	10.55	-1.45	-0.42	-65.66
15	20	12.0	12.85	0.85	0.22	-65.44
to						
43	20	12.0	104.25	92.25	1.68	0.39

B.--Five percent royalty on production

1	10	6.0	--	-6.00	-6.00	-6.00
2	12	7.2	--	-7.20	-6.55	-12.55
3	13	7.8	--	-7.80	-6.45	-18.99
4	15	9.0	--	-9.00	-6.76	-25.75
5	17	10.2	--	-10.20	-6.97	-32.72
6	18	10.8	--	-10.80	-6.71	-39.43
7	20	12.0	1.50	-10.50	-5.93	-45.35
8	20	12.0	3.47	-8.54	-4.38	-49.73
9	20	12.0	5.79	-6.21	-2.90	-52.63
10	20	12.0	8.68	-3.32	-1.41	-54.04
11	20	12.0	12.22	0.22	0.08	-53.95
12	20	12.0	16.27	4.27	1.50	-52.46
13	20	12.0	21.11	9.11	2.90	-49.56
14	20	12.0	26.38	14.38	4.17	-45.39
15	20	12.0	32.13	20.13	5.30	-40.09
to						
21	20	12.0	78.70	66.70	9.91	9.51

Number of new projects and obligations per year based on UNDP Revolving Fund estimates.

Royalty period limited to 15 years of active production within a period of 30 years. Assume continuous production in first 15 years of operation for these analyses.

Discounted cash flow @ 10 percent.

The present value of a sum of money expresses the greater economic value attached to earlier payoffs or disbursements in relation to later transactions. The present value can be represented by the formula:

$$PV = Qt/(1 + r)^t,$$

where PV is the present value in period 0 of a sum of money Q_t received in period t at an interest rate r. The analysis can be extended to include cash flows over several (n) periods by representing the present value as

$$PV = \sum_{t=0}^n Q_t(1 + r)^{-t}$$

The periods of time needed for the UNDP Revolving Fund to reach a revolving status are projected to be 15 and 11 years, respectively, depending upon whether a 2 percent or 5 percent royalty on production is required. These projections are based on data and estimates considered by the UNDP and on other assumptions and variables including the annual value of mine production, royalty rate, amount of annual obligations to new projects, years to reach production, and the discovery rate. The years required to reach a revolving status and to repay cumulative obligations are estimated to be as follows:

<u>Royalty on value of mine production</u>	<u>Value of annual mine production, in millions of dollars</u>	<u>Years from start of program until annual royalties exceed \$12 million annual obligations</u>	<u>Years until cumulative obligations are liquidated</u>
2 percent	30	15	43
5 percent	30	11	21

Lead time, the period of time between discovery and production, when all studies, development, and operating facilities are undertaken and completed, determines how soon royalty income may be expected. Small deposits usually can be developed and made productive in less time than is

required to bring large deposits on stream, but the level of output is proportionately less, and the amount of royalty would be smaller than is expected from a large deposit.

It is unlikely that annual production from an individual mine which may receive exploration assistance from the proposed Mineral Exploration Fund in Bolivia would reach the \$30 million level shown in the analyses of the UNDP Revolving Fund program. Large operations, such as open pit, porphyry copper mines, probably are considered to be the principal source of royalties for the UNDP program if the projected income level is to be realized. Presently known deposits in Bolivia are not of the size likely to yield a similar level of income.

United States

Mineral exploration loan programs

The United States Government has been involved in mineral resource exploration programs for four principal purposes:

1. To find deposits of specific commodities during periods of emergency when industry has to concentrate on production activities and has little time, funds, or personnel available for exploration;
2. To enlarge the domestic mineral resource base in the light of future needs for economic growth and security;
3. To obtain data on which to appraise the Nation's mineral resources;
and
4. To encourage minerals exploration by private industry.

Since 1950, the Department of the Interior has provided three successive programs of financial assistance to private industry to stimulate exploration for domestic mineral reserves. These were the Defense Minerals Administration (DMA), 1950-1951, and the Defense Minerals Exploration Administration (DMEA), 1951-1958, programs, both authorized under the Defense Production Act (DPA) of 1950, as amended, and the Office of Minerals Exploration (OME) authorized by the Congress under Public Law 85-701, August 21, 1958 (copy in Appendix together with Regulations--Title 30). OME operated as an agency in the Department of the Interior until the program was transferred to the U.S. Geological Survey effective July 1, 1965. Each of these programs provided loan funds to approved applicants for work on mineral exploration projects.

The value of reserves of recoverable minerals discovered to date on 453 of 1,369 exploration projects is estimated to be \$1.2 billion. This new mineral wealth eventually will be tapped to help meet future emergencies and the Nation's expanding demand for minerals. It provides a domestic supply

of minerals which otherwise would have to be obtained from foreign sources. The Government's financial contribution will be recovered in part, either directly from royalties on production, or indirectly in taxes and other benefits.

Loans to explore deposits of 36 eligible minerals are offered by OME on a participating contractual basis to private industry. At present, 27 mineral commodities important to the economy except lead, zinc, and tungsten are eligible for Government participation in 50 percent of the allowable costs of exploration. In addition, gold, silver, the platinum group metals, mercury, antimony, bismuth, rutile, tantalum, and tin are eligible for 75 percent Government participation. Combinations of minerals from the two groups are eligible for Government assistance of 62 1/2 percent of the allowable costs.

Assistance is not available to finance prospecting ventures or to develop properties for mining. Government participation in a single contract may not exceed \$250,000.

Repayment to the Government of Federal funds expended on an exploration contract plus simple interest is made through a royalty of five percent of the gross proceeds from any production sold from the property from the date of the contract. If within 6 months of final reporting and accounting on a contract the Government decides to issue a certificate of possible production, the period of royalty obligation continues to not less than 10 years or more than 25 years from the date of the contract, or until the Government contribution is fully repaid with interest, whichever occurs first. If a certification is not issued, the operator is advised that there is no further obligation for royalty payments.

Simple interest accrues on Federal funds as they are made available. The rate of interest is not less than the Department of the Interior would be required to pay if it borrowed from the Treasury, plus a two percent interest charge in lieu of the actual cost of administering the contract.

The decision on whether to approve or deny an application is based on the report from the field office, the soundness of the applicant's proposal, and various qualifying criteria. A contract prepared for approved applications clearly specifies the work to be done by the operator or by a contractor chosen by the operator, the allowable costs of various items of work, the total allowable cost of the project, and the Government's share of the cost. Copies of cost estimate forms and a sample contract are included in the Appendix.

During the course of contract work, the operator submits to the Government periodic, usually monthly, reports describing the work accomplished and vouchers for expenses incurred. Reimbursement is made by the Government for approved work completed in the previous month or operating period. Field personnel periodically examine properties where contract work is underway. Contracts may

be amended if changes are judged advantageous to the Government. At the conclusion of the exploration project, OME field personnel prepare a technical report on the results of the work. If no discovery is made, the contract is terminated, and no further obligation remains for repayment of Government funds expended. If, however, a discovery is certified by the Government and the operator or successor producer sells ore produced from the property, the loan and accrued interest are repaid through royalty (5 percent) on production according to terms of the contract. OME personnel continue to monitor certified projects until the Government's contract expenditures and interest are repaid or until the repayment period has expired, whichever occurs first.

The DMEA program offered assistance to all approved applicants whether individuals, partnerships, small companies, or large companies. Its success in discovering significant ore reserves was due, in substantial part, to the broad base of participation. In contrast, the OME program limits participation to the small operators who are unable to obtain financial help from commercial sources on reasonable terms. Its modest record of mineral discoveries over a span of years more than twice the duration of the DMEA program is attributed in large part to the restriction on participation.

The Government could not solicit applications for assistance to explore promising mineral properties under either the DMEA or the OME programs. The initiative for submitting applications for assistance was, and is, the responsibility of the private sector. Changes in proposed exploration projects could be suggested to the applicant if economies could be made in operation, or if targets could be explored more effectively.

The repayment record of the DMEA program shows that 97 of the 399 contracts certified as successes repaid their loans in full within periods ranging from a few months to over 15 years, and averaged five years from date of contract. Repayments, based on a royalty of five percent on production, totalled \$5.5 million from mine production valued at \$110 million. About 35 percent of the DMEA projects were certified as successes, and about 25 percent of these fully repaid their loans to the Government. These repayments constituted 80 percent of the total amount received in royalties from all contracts.

One quarter of the OME contracts have been certified as successes, and only about 9 percent of the total Government expenditures for project work has been repaid through royalties on production. The limited success of the OME program is attributed in part to the fact that the large mine operators are not eligible to participate whereas all operators, large and small, participated in the DMEA program.

The following statistical summary of the DMEA and OME programs illustrates that neither program was self-supporting (that is, neither program derived royalties from production equal to expenditures), but the recoverable value of ore discoveries made under each program far exceeded the total cost to the Government for contract expenditures, technical and administrative expenses.

Table 27.--Statistical summary of DMEA and OME programs through June 30, 1975

	<u>DMEA</u>	<u>OME</u>
Years in force	8	17
No. of applications	3,888	944
No. of contracts	1,159	210
No. of certified discoveries	399	54
Contract disbursements by the Government	\$23.3 million	\$4.8 million
Technical and administrative expenses to the Government	\$8.4 million	\$4.1 million
Average annual costs to the Government, exclusive of interest	\$4.0 million	\$0.52 million
Write-offs (losses to the Government on contracts permanently closed)	\$14.9 million	\$2.1 million
Royalties on production paid to the Government	\$7.1 million	\$0.43 million
Loans repaid in full	97	6
Estimated recoverable value of ore discoveries	\$1 billion	\$170 million
Ratio of applications to contracts	3.3 to 1	4.4 to 1
Ratio of applications to certified discoveries	9.7 to 1	17.4 to 1
Ratio of contracts to certified discoveries	2.9 to 1	3.9 to 1
Ratio of certified discoveries to loans repaid in full	4.1 to 1	9 to 1
Ratio of applications to loans repaid in full	40 to 1	157 to 1
Ratio of contracts to loans repaid in full	11.9 to 1	35 to 1

Uranium program

The United States uranium exploration and development program in the period 1947-1962 was the largest mineral development endeavor ever undertaken in the history of the world's mineral industry. Under the Atomic Energy Act of 1946, the Atomic Energy Commission (AEC), now a part of the Energy Research and Development Administration, offered the following incentives:

1. Guaranteed minimum price for certain high grade uranium ore for 10 years.
2. Bonus of \$10,000 for delivery of premium grade uranium ore from deposits not previously worked for uranium.
3. Guaranteed minimum prices for certain uranium-bearing ores, and vanadium associated with uranium ores.
4. Haulage and development allowances for uranium ore producers.
5. Bonus payments for initial and certain other production of uranium ores to assist in developing new sources.
6. Provided for access to lands for uranium mining purposes which otherwise were not open to mineral location, and issuance of leases for mining uranium deposits on certain lands.
7. Supported inclusion of uranium and vanadium on the list of minerals eligible for Government financial assistance in the program of the Defense Minerals Exploration Administration (DMEA).
8. Establishment of ore-buying stations in new uranium-producing areas.
9. Supported a broad program of geological studies and uranium exploration conducted by its own staff and by the U.S. Geological Survey. For example, the AEC and the USGS drilled a total of 5,575,000 feet of drill holes in the Western States in the period 1948-1956.

The AEC program increased uranium ore reserves from 1 million tons to 86 million tons in 11 years. It increased annual uranium ore production to 8 million tons in 1960 from 50,000 tons in 1948, and enabled the uranium industry to fulfill supply requirements for strategic purposes by 1958. Also, it provided a basis for industry to gear up for civilian nuclear power needs beginning in the early 1960's.

Access roads programs

The United States Government in the early 1950's shared in the costs of constructing access roads to mineral deposits under financial assistance

programs to encourage mineral exploration authorized by the Defense Production Act of 1950. Usually an access road for exploration was considered a part of the exploration project and its expense was included in the total cost of the project work.

Also, during the 1950's, mine access road construction allowances were added as premiums to the Government's payments to producers of uranium ore.

COMMENTS

The thirteen programs herein reviewed offer assistance for improving infrastructure facilities, training for prospectors, exploration incentives, and opportunities for development and production.

There is a need for access roads to mineral properties or mineralized districts in Bolivia. Whether access road construction should be included as an item in the proposed Minerals Exploration Fund has not been discussed with Ministry officials. Resolution of the question depends basically on the decision on the priority of claims on available funds.

Road and airport construction programs in Canada call for Federal contributions toward construction and dedication to public use of all facilities completed with first priority given to use for mineral resource development.

The expense of building access roads for mineral development in the United States was included as part of the exploration project for which Federal funds were expended on exploration. Federal funds used for road building, therefore, were repayable through royalties on mineral production.

A minerals exploration program in Bolivia should include assistance to the prospector. The several programs offering aid to prospectors in Canada could serve as models on which to draft applicable assistance in Bolivia. Technical resources available in GEOBOL, the University, and the mining sector could be utilized for training purposes at selected sites such as in La Paz, Oruro, Potosi, and Cochabamba. The portion of the Fund dedicated to prospector training probably should be limited to a fixed percentage, perhaps 5 percent of available funds.

Exploration programs on mineral deposits using government funds entirely have been conducted in the United States (uranium exploration) and Canada (SOQUEM). COMIBOL also uses public sector funds in its exploration program although COMIBOL is a corporate entity as is SOQUEM.

The majority of the minerals exploration loan programs provide for joint ventures with the private sector, and all include some provision for repayment of government funds expended on exploration with terms for repayment

varying among programs. Some require repayment within a specified period of time, others require repayment of government funds expended on the basis of a royalty on production plus interest. The latter approach to repayment may offer greater incentive for exploration in the small and medium mining subsectors. Loans to COMIBOL should be considered as commercial loans repayable on a predetermined schedule with interest, regardless of the success or failure of the project undertaken.

Under a "repay only if successful" type of loan program, the successes will not support the entire loan program. This is evident from the records of the United States' DMEA program which is considered to have been successful in discovering significant reserves of ore, but royalties from the successful projects were not intended to repay to the Government its contributions to the unsuccessful as well as the successful projects. Approximately one third of the total disbursements by the Government to exploration projects will be repaid by the time period of royalty on the few remaining 'open' contracts terminate in 1989. SOQUEM forecasts a more favorable return to the taxpayer because as a corporate entity, it has certain operating privileges which were not available to the DMEA program.

A continuing royalty payment obligation could be established whereby a successful project would be required to continue paying royalty for a specified period of time (say 25 or 30 years from date of contract) even beyond the point of having repaid its own loan. This type of repayment plan may yield funds in addition to the amount expended on successful projects, but the likelihood is remote that the return would equal or exceed the amount originally invested in the successful and unsuccessful projects.

The terms of a repayment plan that would virtually assure full return of the funds expended on successful and unsuccessful projects would be disincentives rather than incentives for exploration. Royalty rates or payment schedules would have to be so high or demanding as to dissuade prospective borrowers from participating in the program.

RECOMMENDED EXPLORATION PLAN FOR BOLIVIA

The exploration plan described in the following pages was prepared in accordance with the objectives of P.I.P. NO. BOL-1, namely, to consider means by which exploration (in Bolivia) could be stimulated and expanded, and with Bolivian officials, to formulate a general plan and recommendations for implementing the Fund (exploration program). The general idea of the plan was presented in brief form in earlier drafts of this study which were sent to Bolivian officials on October 31, 1975, and November 30, 1976. Correspondence and discussions and conferences in La Paz, Bolivia, and Reston, Virginia, in the period from July 1975 to February 1977, added to the information and ideas which were incorporated in the earlier drafts.

The principal goal of the plan is to hasten the discovery and development of Bolivian mineral resources so that production may be reached as quickly as possible. It is assumed that the results of regional geological investigations will be available so that funds and personnel can be directed to exploring favorable targets within the general framework of known geological features. The general geologic setting of proposed exploration targets outside previously studied areas should be determined while specific deposits are being investigated.

Costs and personnel requirements are estimated for the essential work needed to conduct the exploration project. Taxes and additional expenses required for services mandated by law must be added in accordance with prevailing regulations.

National Minerals Exploration Fund

A practical 'rock-in-the-box' incentive program is recommended to further promote the discovery and development of Bolivia's mineral resources. This program must encourage or enlist the interests, skills and resources of prospectors, geologists, mining engineers, metallurgists, and mining enterprises in the private and public sector, and interest risk capital in the opportunity for profitable investments in Bolivian mining.

Accordingly, a National Fund for Minerals Exploration (the Fund) should be established and authorized to:

- * Conduct training courses for prospectors, and offer grants to qualified individuals to prospect for mineral deposits in designated areas.
- * Furnish technical assistance, including personnel and equipment, or augment existing technical and operating services for assessing the mineral potential of selected areas or properties.
- * Offer loans to qualified applicants in the Medium Mining subsector to explore potentially significant mineral deposits.
- * Conduct exploration projects in the Small Mining subsector under special arrangements with mine owners.
- * Offer commercial type loans to COMIBOL to explore geologic targets in COMIBOL properties.

Funds shall be allocated for these endeavors in the following approximate percentages of the total amount available:

	<u>Percent</u>
Aid to prospectors	5
Technical assistance	15
Loans to enterprises in the Medium Mining subsector	50
Finance exploration in the Small Mining subsector	15
Loans to COMIBOL	15

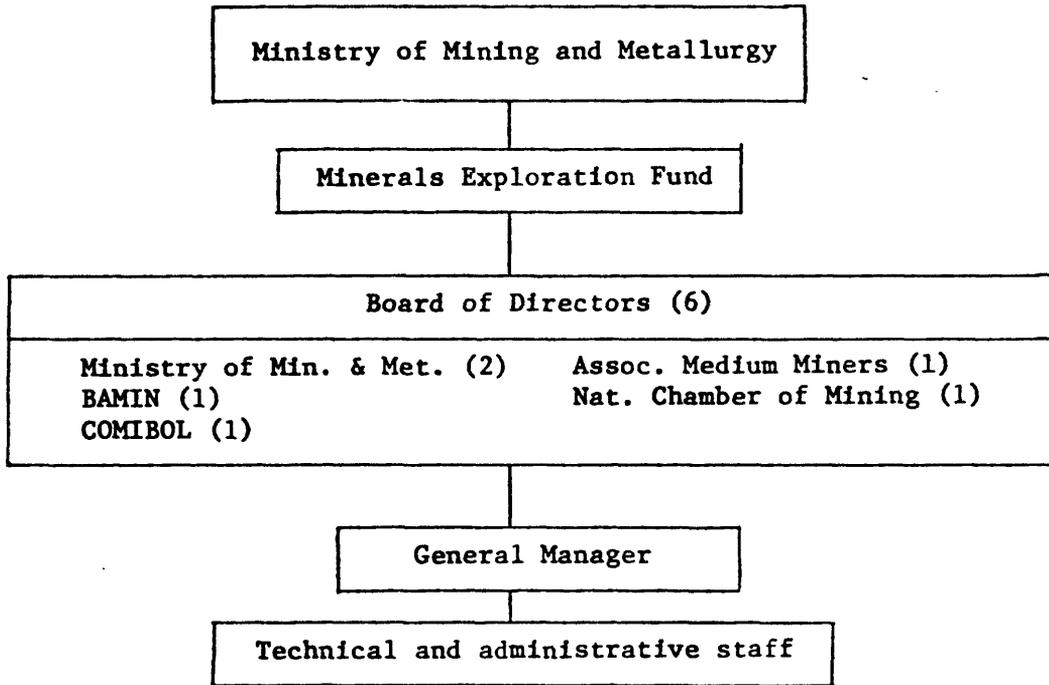
The Ministry of Mining and Metallurgy would have overall responsibility for establishing and operating the Fund. Authority would be delegated to its agencies and organizations for managerial, financial, and technical services. Outside organizations would be engaged for services not available within the Government.

The Ministry would have prime responsibility to obtain capital for establishing the Fund, and for supporting subsequent operations. Sources for capital would include the National Treasury and foreign governments and organizations. Once financing is arranged, the Fund would be operated mainly as an exploration loan organization offering financial assistance to the Large and Medium Mining subsectors; as a joint venture operation offering financial, technical, and exploration assistance to the Small Mining subsector; and as a training and technical assistance program for prospectors and small mine owners and operators.

A reasonable operating budget for the Fund in the first several years would be about \$2.5 million annually, of which field operations would require about \$2 million. The controlling factor on size of operation would be the availability of technical personnel--geologists and mining engineers--for field investigations. Ideally, one geologist and one mining engineer would constitute a field team. A team would make the initial field examination of a property being considered for financial assistance by the Fund, recommend to approve or deny an application for assistance, and conduct the technical services provided by the Fund on projects approved to receive financial and/or technical assistance. One team with necessary supporting personnel should be able to provide technical services to ten operating projects per year, and make inspections and reports on properties examined but not approved for assistance.

When the Fund has reached full operating status, administrative and indirect operating costs should level off at about 25 percent of the total cost of operations. Expenses may exceed this level in the first year or two because of start-up expenses and equipment and supply acquisitions.

The organizational line of authority for the Fund would be as follows:



This organization would be designed to provide the following services to the entities shown:

Type of assistance	Prospectors' training courses, technical assistance.	Joint venture exploration projects and technical assistance	Exploration loans
Operators	Prospectors, small mine owners.	Operators in the Small Mining subsector	Operators in the Medium and Large Mining subsector

Representative duties or activities of the entities shown on the preceding organization chart would be as follows:

Ministry of Mining and Metallurgy:

- Appoint members to the Board of Directors
- Set policy guidelines for the Fund
- Arrange for capital to establish and operate the Fund.

Board of Directors:

- Select General Manager
- Establish rules and regulations to operate the Fund
- Establish guidelines for training prospectors and providing technical assistance
- Establish criteria for considering loan applications
- Establish limitation on amount of participation by the Fund in a single exploration contract
- Establish royalty or repayment plan
- Approve or deny loan applications recommended to the Board by the General Manager.

General Manager:

- Select personnel for Technical and Administrative staff.
- Prepare capital and operating budget each year
- Appoint a committee in the Technical and Administrative staff to review loan applications. This committee would be designated the Review Committee and the General Manager would serve as Chairman.

Direct that field examinations be made of properties described in applications referred by the Review Committee, and considered to merit investigation on the basis of geologic information.

Refer applications recommended for approval by the Technical and Administrative staff to the Board of Directors for final approval for exploration contract.

Supervise preparation of exploration contracts, project operations, and administrative activities on behalf of the Fund.

Technical and administrative staff:

Prepare loan application and contract forms and other documents needed to operate the program.

The Review Committee will review all loan applications, return incomplete applications for further information, and refer complete and accepted applications to the General Manager.

Assemble Field Teams, each to include a mining or economic geologist and a mining engineer.

Field Teams will:

Conduct field examinations of properties described in each application accepted and referred for further processing by the General Manager

Prepare reports on results of field examinations with recommendations to approve or deny each application.

Conduct interim inspections of each exploration project, usually on a monthly basis, to examine geologic findings from work done, to check on work completed under terms of the contract, and to determine if a change in work plan is needed.

Review and approve or deny payment of vouchers submitted for project work completed since date of the previous voucher.

Recommend and draft amendments to contracts.

Conduct final examination of project upon completion of exploration project.

In cooperation with the entire technical and administrative staff, prepare final reports on completed projects.

Fiscal and budget personnel will disburse payments on approved vouchers, collect and account for royalty payments received, and maintain all financial records.

Designated staff members will maintain personnel records and recommend to the General Manager necessary personnel actions.

Aid to prospectors

The Fund shall conduct introductory training courses for prospectors in cities or towns such as La Paz, Oruro, Potosi, Cochabamba, and others which are in or near mining districts or regions. A general course in rock and mineral identification, general geology, prospecting, and exploration will be offered to interested persons who are uninformed on these subjects. Some instruction on mining methods may be offered, too, depending upon availability of instructors and funds. A successor course offering more detailed instruction in practical prospecting methods will be available to those desiring a working knowledge of prospecting. A nominal fee may be charged to enrollees for these courses to help offset costs. The Fund will cover additional costs up to the level established for this activity. At the level of operations suggested for the Fund, aid to prospectors would range between \$100,000 and \$125,000 annually.

Details on duration, daily schedule of class instruction and related matters will be formulated to suit the circumstances in each locality.

The courses will be given at two-week intervals during seasons most convenient to the public. Facilities of schools, local public meeting halls, or Government facilities will be used. The number of students and instructors per class will depend upon the space, equipment, and training personnel available. Nominally, 25 to 35 students with one supervisor and 2 or 3 technical instructors will comprise one class. Each 10-day course will include daily morning and afternoon 3-hour sessions.

Instructors for these courses shall be detailed from available technical organizations, companies or associations who have professional geological or engineering staffs.

The basic educational materials are rock and mineral samples. Individual sets, each containing samples of rocks and minerals commonly found in mining districts in Bolivia, should be available for training in general identification and classification of rocks and minerals.

Also, the Fund shall consider offering practical training to prospectors in the field. Such training could include field demonstrations of prospecting techniques and methods or grubstake grants to experienced prospectors with bonuses offered for specific investigations in promising areas.

Technical assistance

The Fund should assist GEOBOL's Small Mines and Mineral Resources Inventory unit in its prefeasibility studies project. In helping to meet the objectives of this program--providing technical assistance to the Small Mining subsector, and conducting preliminary geological studies on selected deposits--the Fund would benefit because such work would improve chances for selecting the more promising exploration targets for later consideration by the Fund, and help reduce the risk in exploration.

Participation by the Fund in the prefeasibility project should be governed by provisions similar to those in Article III, Part B of the Project Agreement between the World Bank and BISA, Credit No. 455 BO, January 18, 1974, mentioned previously. One important departure from these provisions could occur if GEOBOL technical personnel were unavailable to undertake certain investigations. Professional personnel from the Technical and Administrative staff of the Fund could be utilized in these instances.

About 15 percent has been suggested as a reasonable share of the Fund's annual budget for technical services. This would provide from \$300,000 to \$375,000 each year for a service which would help support the overall goal of the Fund.

Loans to enterprises in the Medium Mining subsector

The plan of operations proposed for the Fund in this subsector is virtually the same as the U.S. Geological Survey's Office of Minerals Exploration (OME) program which is described earlier in this report. Regulations, sample contracts, and cost estimate forms for the OME program are included in Appendix F to this report.

The sequence of actions and decisions from receipt of an applicant's request for exploration assistance to execution of a contract for exploration work, and the responsibilities and actions of the Operator and of the Fund from start to completion of an exploration contract are shown in figures 7 and 8.

As stated previously in this report, the Board of Directors will be responsible for establishing criteria for considering loan applications, deciding on the extent of participation by the Fund in a single exploration contract, and establishing a royalty or repayment plan.

Any individual or company operating in the Medium Mining subsector should be eligible for consideration for an exploration loan. All nonfuel metallic and nonmetallic mineral deposits should be eligible for assistance. The extent of aid offered can be established by stating a percentage of assistance for individual commodities--thus, exploration for tin may be eligible for assistance amounting to 50 or 75 percent of allowable costs, and exploration for sulfur may be eligible for 35 percent assistance. The aid offered may be more liberal for commodities expected to yield greater production and income, and not as liberal for commodities with less promise of significant economic return.

The extent of Fund participation in a single exploration contract depends upon the total funds available to the Fund, and the number of projects that the staff can manage. For example, an annual exploration budget of \$2 million probably could support 10 operating projects. The staff also would have to conduct the initial examinations and prepare reports need on all applications received and accepted during the year. Successive contracts on the same property should be permitted if the limitation on funds for a single contract precludes completion of an extensive exploration project. The amount obligated per contract should be determined by the estimated total cost of the work needed to complete the proposed exploration project. For example, a contract for 500 meters of diamond drilling may require \$50,000, of which the Fund's share, based on percentage assistance offered, may be \$35,000. Another contract for 1,000 meters may require an obligation of \$70,000 by the Fund. Within a period of several years, the Fund would be assisting a number of projects, none with obligated funds exceeding the ceiling established for Fund participation in single contracts, and possibly no two contracts obligating the same amount of money.

Figure 7 .--Flow chart of actions from application to contract.

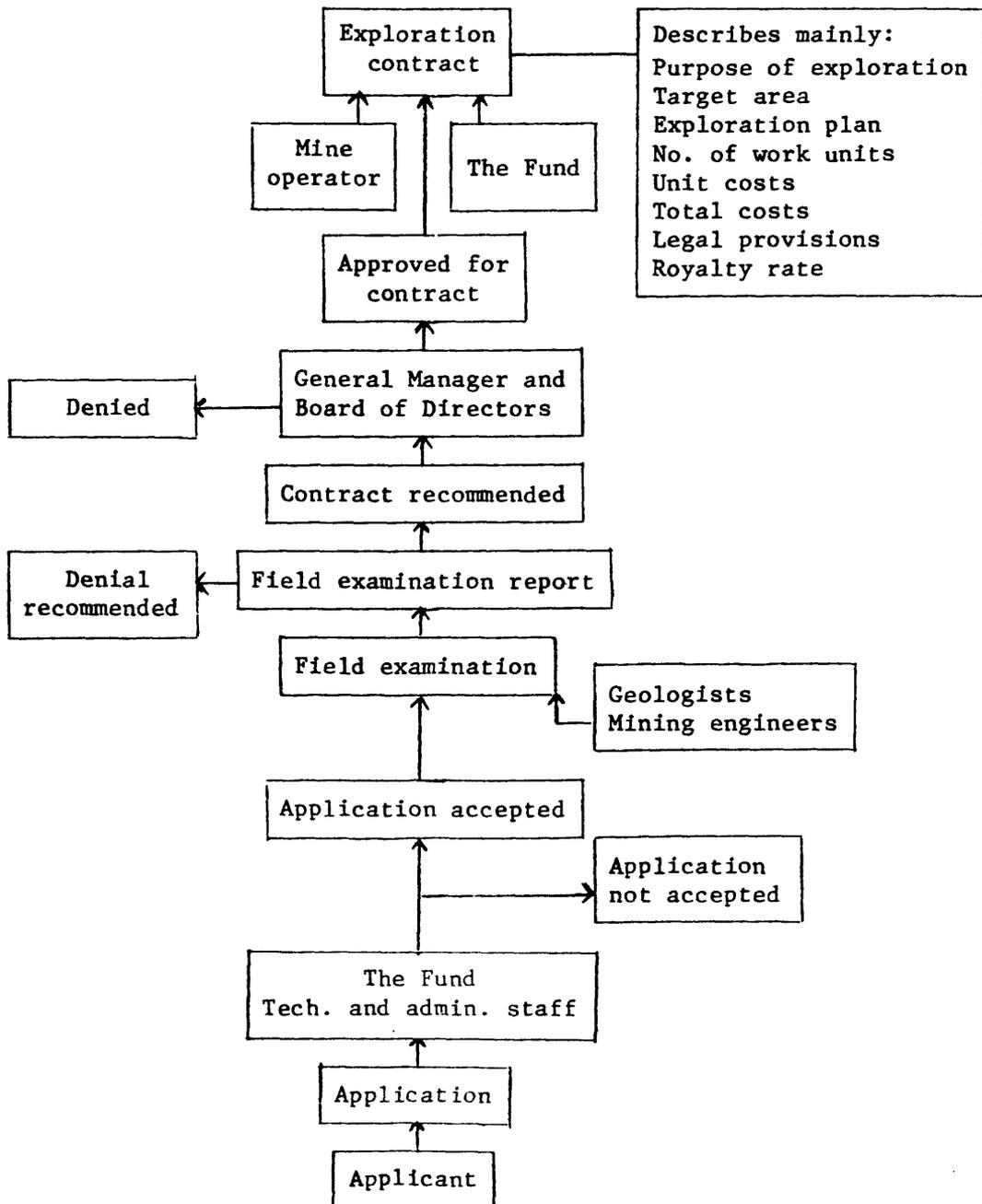
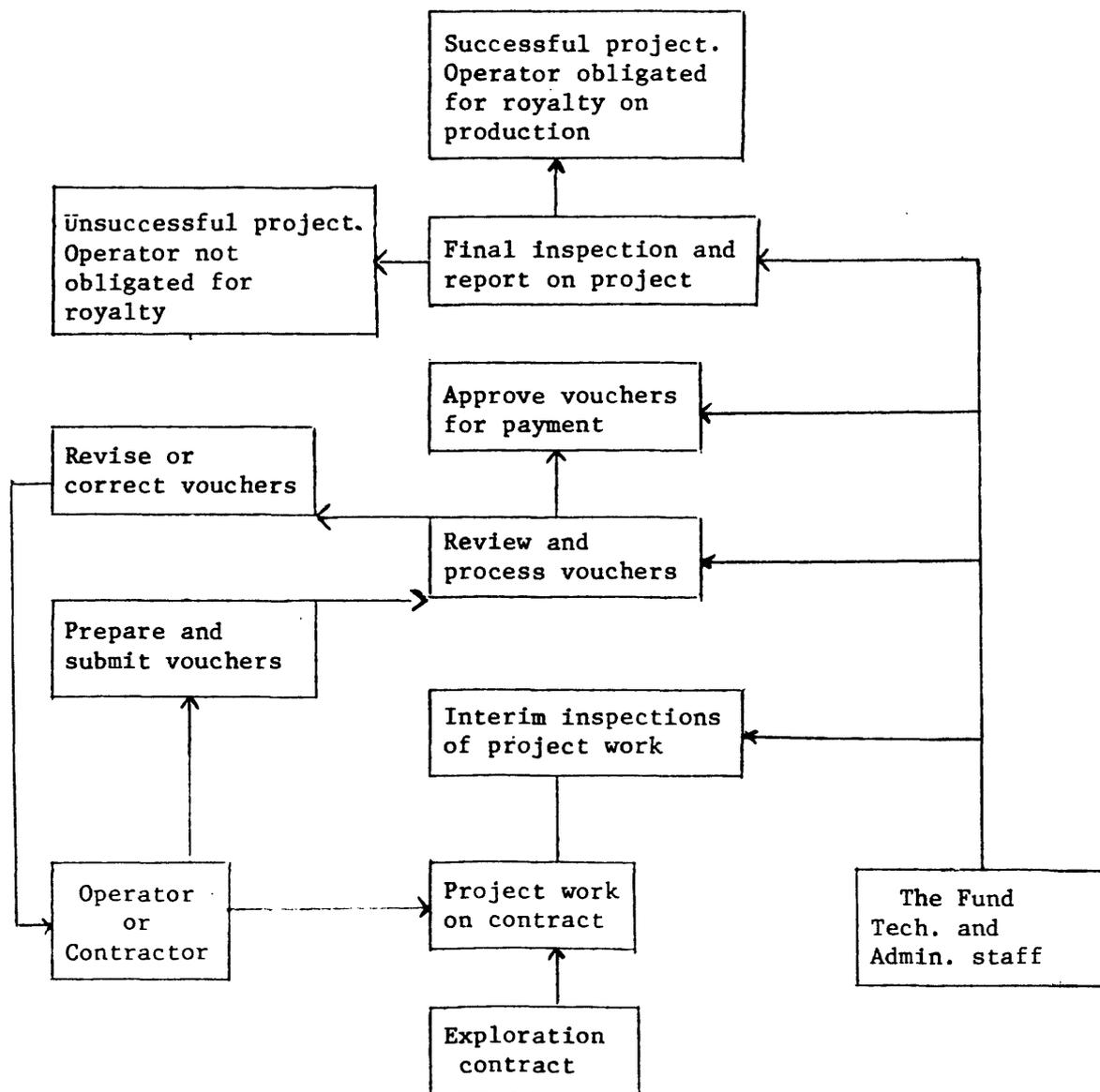


Figure 8.--Flow chart of actions from start to completion of an exploration contract.



The review of exploration programs in other countries in this report disclosed a number of repayment plans. These included full repayment of loans by installments or in a lump sum regardless of production; royalty on production for a stated period of years; and royalty on production for an unlimited number of years. Proposals have been considered to change one of these plans to require royalty on production until the loan plus an extra percentage (35 to 200 percent) is repaid. Whether any one or a combination of these plans is in the best interests of the Fund has to be decided by the Board of Directors. The plan adopted should not be a disincentive to exploration. The rate of repayment, the period of time for payments, and the interest charged will be critical to this decision. Royalty payments should be applied first to pay accrued interest and the balance used to reduce the principal.

A repayment provision in exploration contracts between the Fund and operators in the Medium Mining subsector similar to that in the U.S. Geological Survey's OME exploration contracts is recommended. The OME royalty of five percent on value of sales does not impose an undue demand on the Operator's proceeds from individual sales. Article 6 in the OME short form contract and Article 7 in the long form contract set forth the provisions pertaining to royalty obligations, rate, and instructions for payment. Copies of both contract forms are included as Appendix F to this report.

Interest on OME contracts is charged at a rate not less than the Department of the Interior would be required to pay if funds were borrowed from the Treasury Department, plus 2 percent in lieu of charging the borrower for the actual cost to the Government of administering the contract. A similar calculation could be used for establishing interest on individual contracts executed by the Fund.

Neither of the exploration assistance programs (DMEA or OME) in the United States required the borrower (Operator), whose project was certified by the Government as a success, to pay any amount beyond the principal and interest charges. In other words, the successful projects are not required to pay for the unsuccessful projects. Losses on both programs are written off by the Government, and not charged to either the successful or the unsuccessful projects.

Financing exploration in the Small Mining subsector

It was observed in the review of the Small Mining subsector that the individual operator is often unable to undertake exploration on his own resources, even on a matching fund or joint participation basis with outside interests. GEOBOL's prefeasibility project provides much needed geological assistance at selected properties, but is unable to undertake

many projects because of funding constraints. In order to provide additional assistance, the reviewer suggested that a Government agency undertake exploration or development projects in the Small Mining subsector that could be mutually beneficial to a number of operators in the same district.

The Fund could offer this type of assistance to the small mine owners, and should do so through the same site selection procedure that is used for the prefeasibility project. Once a geologically favorable exploration target has been chosen, the Fund will negotiate agreements with owners of the properties included within the area to be explored. A group of owners who are agreeable to an exploration program on their properties would be referred to as 'the company' in subsequent actions. These agreements will be similar to contracts between mining companies and GEOBOL's Inventory Program on Mineral Resources of the Small Mining subsector. A model contract, identified as Annex No. VI in Report No. 1--A Description of the Small Mines Prefeasibility Program,* specifies that the staff of the Inventory Program will conduct geological-mining surveys and evaluations on the properties, and the companies will provide all the supplies and materials needed. The mining companies will be obligated to pay the cost of the surveys and evaluations only if financing can be arranged, and then will have a choice of several alternative repayment plans. The term 'Fund' would be substituted for the term 'Program' used in the model contract if this form is adopted by the Fund.

Upon completion of a study by the Fund and assuming that the results are favorable, the company would be expected to begin production, and to pay royalty on production according to terms and to the extent established for the Fund.

The review of the Small Mining subsector showed that there are many properties in this subsector and it appears reasonable to expect that significant exploration targets exist. The challenge is to recognize where they are and to persuade the property owners to cooperate with the Fund in the exploration work, and to agree to undertake production following successful exploration projects.

Loans to COMIBOL

The Fund will be authorized to offer assistance for exploration in the Large Mining subsector. Because COMIBOL is the only operator in this subsector, and has property, installations, and financial assets for collateral, commercial-type loans will be available from the Fund for exploration projects. Geologists and mining engineers from the Fund will

* Included with information from Ministerio de Minería y Metalurgia, dated July 22, 1976.

examine each proposed exploration site in order to determine whether the project warrants participation by the Fund. If so, a contract specifying the work plan, estimated unit and total costs, and schedule of repayment will be executed by the Fund and COMIBOL. All technical work on the contracts will be done by COMIBOL's staff and personnel. COMIBOL's equipment, supplies, and employees will be used in the course of the work.

Major exploration targets are known in and surrounding the large mines. The opportunity for the Fund to participate in projects within this subsector promises to result in discoveries of major ore bodies.

Environmental considerations

The impact on the environment by mineral exploration activities depends on the characteristics of the terrain, soil, and climate, and on the types of exploration work conducted. The differences that similar activities can impose on jungle, alpine, desert, and forest areas are self evident. Geologic mapping and geophysical surveying have essentially no impact, since they involve only traverses across the land surface by foot or by vehicles with portable instruments. Geochemical surveying typically requires the removal of small samples with minimum disturbances of the surface at each sample site. Other investigative techniques may have somewhat more environmental impact, although with advance planning each can be accomplished with minimum or no permanent loss of surface values. Thus, properly planned surface test pits, drill holes, and shafts and tunnels may be used to determine the location, extent and character of potential mineral deposits without harm to the environment.

In the event the mineral exploration projects succeed in discovering economic concentrations of useful materials, the impact on the environment by subsequent mining activities may be more significant than those associated directly with the exploration phase. The potential problems need to be considered in balance with the potential economic benefits to be derived from exploitation of the mineral resources. Mining activities can be regulated and monitored, and most of the land surface ultimately can be returned to near its original configuration and returned to beneficial use after the mineral raw materials have been removed. Safeguards to ensure maximum protection of surface values during active mining, and to restore disturbed surface areas upon completion of mining can be made a part of the laws and regulations governing the mining industry.

References

- Ahlfeld, Federico, 1956, Bolivia, in Handbook of South American geology: Geol. Soc. America Mem. 65, p. 168-186.
- _____ and Schneider-Scherbina, Alejandro, 1964, Los Yacimientos minerales y de hidrocarburos de Bolivia: Bolivia, Dept. Nac. Geol. Bol. no. 5.
- Amembassy La Paz, 1975, Industrial Outlook Report: Minerals 1973-1974, Airgram A-97, CERP 0429, 52 p., 2 encl.
- _____, 1976, Industrial Outlook Report: Minerals 1975, Airgram A-86, CERP 0429, 73 p., 4 attachments.
- _____, 1977, Industrial Outlook Report: Minerals 1976, Airgram A-38, CERP 0429, 69 p., 6 attachments.
- Asociacion Nacional de Mineros Medianos, 1974(?), La Minería Mediana de Bolivia: La Paz, 16 p.
- Corporacion Minera de Bolivia, 1975, Corporacion Minera de Bolivia, 1952-1975: La Paz, 104 p.
- Gillis, Malcolm, Bucovetsky, Meyer W., Jenkins, Glen, Petersen, Ulrich, Wells, Louis T., and Wright, Brian, 1975, Taxation and the mining sector in Bolivia: Harvard Univ. Inst. Internat. Development, Cambridge, Mass., 3 v., 583 p. and 12 appendices.
- Instituto Geografico Militar, 1973, Mapa de Bolivia.
- Ministerio de Minería y Metalurgia, 1975, Bolivia minera en numeros: La Paz, 152 p.
- _____, 1976, Anuario Estadístico Minero; 181 p.
- _____, 1976a, Estudio de Factibilidad del Fondo Nacional de Exploración Minera, v. I, 175 p., v. II, 16 appendices.
- Pan American Union, 1969, Bolivia--Mining legislation, in Mining and petroleum legislation in Latin America: General Secretariat, Organ. American States, Wash., D.c., p. 17-31.
- Sainsbury, C. L., and Reed, B. L., 1973, Tin, in United States mineral resources: U.S. Geol. Survey Prof. Paper 820, p. 637-651.
- Servicio Geológico de Bolivia, 1968, Explicación del Mapa Geológico de Bolivia.

Turneure, F. S., 1971, The Bolivian tin-silver province: Econ. Geol., v. 66, no. 2, p. 215-225.

U.S. Bureau of Mines, Commodity Data Summaries, 1976, 196 p.

_____, Minerals Yearbooks, various editions, v. 1, Metals, minerals, and fuels: Washington, D.C., U.S. Govt. Printing Office.

Wimpfen, Sheldon P., 1973, Mine costs and control, in SME Mining Engineering Handbook: Soc. Mining Eng., Am. Inst. Mining, Metall. and Petroleum Eng., v. 2, p. 31-2 to 31-50.

MEMORANDUM OF UNDERSTANDING
BETWEEN
MINISTRY OF MINES AND METALLURGY
AND
DEPARTMENT OF THE INTERIOR, GEOLOGICAL SURVEY
UNITED STATES OF AMERICA
FOR
TECHNICAL ASSISTANCE
IN
MINERAL EXPLORATION AND DEVELOPMENT

MEMORANDUM OF UNDERSTANDING
BETWEEN
MINISTRY OF MINES AND METALLURGY

AND

DEPARTMENT OF THE INTERIOR, GEOLOGICAL SURVEY
UNITED STATES OF AMERICA

FOR

TECHNICAL ASSISTANCE
IN
MINERAL EXPLORATION AND DEVELOPMENT

ARTICLE I. Scope.

This Memorandum of Understanding is entered into this 25
day of ABR 1975 between the Ministry of Mines and Metallurgy,
Government of Bolivia (hereinafter referred to as the Ministry) and
the U.S. Geological Survey of the Department of the Interior, Govern-
ment of the United States (hereinafter referred to as the USGS). The
Ministry, in consideration of its responsibilities for national policies
and programs in mining and metallurgy in Bolivia and the capabilities
of the USGS for national geological and mineral appraisal programs in
the United States, has asked the USGS to assist the Ministry in
investigations and strengthening its capacity and programs for
exploration, appraisal and development of mineral resources. This
document, when approved by both parties, constitutes a Memorandum
of Understanding under which a program of assistance may be carried
out pursuant to the General Agreement for Technical Cooperation between
the Government of Bolivia and the United States of America signed at
La Paz on March 14, 1951. Specific projects under this program will
be defined and scheduled by means of Project Implementation Plans as
mutually agreed between the two parties, and will be carried out jointly
by the USGS and the pertinent agencies of the Ministry.

ARTICLE II. Purpose.

Under this program, techniques and expertise developed by the USGS
will be applied to help the pertinent Bolivian agencies strengthen,
enlarge, and intensify their resources exploration and development
activities. Such activities are part of a major effort by the Ministry
to increase the long-range contribution of the mining sector to the
economic growth of Bolivia.

Ministry objectives include technical and scientific support to the pertinent Bolivian agencies, exchange of technical knowledge, and assistance in the establishment of a properly trained professional staff in the geologic-mining field.

ARTICLE III. Procedures.

Under this Memorandum of Understanding, specific projects will be defined, scheduled and carried out as mutually agreed by the parties. The following procedures shall be followed:

3.1. The Ministry will transmit to the USGS a written request for assistance desired together with pertinent reference documents and detailed recommendations so that the request may be evaluated by the USGS. Such requests shall include:

- a. Scope and objectives of the proposed project.
- b. A proposed schedule of time involved; dates of proposed beginning and length of the project.
- c. Volume and type of assistance requested.
- d. Recommendations on operational details.

3.2. The USGS will evaluate the request based upon review and recommendations of the Technical Committee and if it accepts the proposal will take the following actions:

- a. Prepare a draft Project Implementation Plan which shall include the following:
 - (1) Scope and method of operation.
 - (2) USGS manpower and financial requirements.
 - (3) Ministry support requirements.
 - (4) Other operational requirements and/or conditions not already included in the Memorandum of Understanding.
- b. Submit the draft Project Implementation Plan to the Ministry for review, comment, and approval.

3.3. In the event the USGS cannot undertake the requested assistance for any reason, it will communicate this fact to the Ministry in due course.

3.4. If the requested assistance is beyond the USGS capacity, USGS will attempt to arrange for obtaining the necessary expertise from other sources, subject to the concurrence of the Ministry.

ARTICLE IV. Technical Committee.

4.1. The parties involved shall establish a Technical Committee which shall be formed by one or more representatives of each party and other specialists as they deem necessary. This Committee shall perform the following functions:

- a. Review and make recommendations to the parties on all proposals submitted under this Memorandum of Understanding.
- b. Periodically evaluate all ongoing projects and submit conclusions and recommendations for each project.
- c. Meet as necessary but not less than once each year in La Paz, and/or any other place agreed to by the Committee.

ARTICLE V. Reports and Documents.

5.1. The USGS shall provide administrative progress reports within 30 days after the termination of a project if the duration of the project is less than one year and once a year for those projects extending beyond one year.

5.2. The USGS shall provide formal scientific and technical reports as may be mutually agreed.

5.3. The USGS shall provide semi-annually a financial statement of obligations incurred by the USGS for each project being conducted under a Project Implementation Plan.

5.4. Results of completed projects shall be published to the extent and in a manner mutually agreed upon by the USGS and the Ministry.

5.5. All maps, drawings, photographs, mosaics, plans, reports, recommendations, estimates, documents and all other data compiled or received under specific Project Implementation Plans executed pursuant to this Memorandum of Understanding by the USGS shall be the property of the Ministry, shall be treated as confidential and shall be delivered only to the Ministry, or other authorized officials; their contents shall not be made known by the USGS under any circumstances to any person, institution or agency other than personnel of the USGS performing services under the specific Project Implementation Plan without written consent of the Ministry or other Ministry authorized official.

ARTICLE VI. Responsibilities of the USGS.

The USGS agrees to undertake the following:

6.1. Provide the services of USGS personnel subject to their availability to carry out projects covered by approved Project Implementation Plans.

6.2. Designate a USGS employee to serve on the Technical Committee.

6.3. Designate a USGS employee as a Program Coordinator.

6.4. Designate a USGS employee as USGS Project Officer for each project, who shall be responsible for planning and coordinating the work to be performed under the specific Project Implementation Plan. He will maintain close continuing relations with the Ministry Project Officer and Ministry Program Director and USGS Program Coordinator, consulting with them in the performance of project activities.

6.5. Provide technical support to the specific projects as may be needed and available in order to achieve the objectives of each project.

ARTICLE VII. Responsibilities of the Ministry.

The Ministry shall, either directly or through other Government of Bolivia agencies, provide support of the specific projects as cited below:

7.1. Designate a Bolivian employee to serve as Ministry Program Director.

7.2. Designate a Bolivian employee to serve on the Technical Committee.

7.3. Designate a Bolivian employee as Bolivian Project Officer who shall be responsible for exercise of the responsibilities of the Ministry or other pertinent Government of Bolivia agencies in support of the specific project and the coordination of activities with the USGS Project Officer and USGS Program Coordinator.

7.4. Provide, in accordance with the terms of the Technical Cooperation Agreement signed by the United States of America and the Government of Bolivia on March 14, 1951, duty-free entry and exit of equipment and materials belonging to the U.S. Government that may be required temporarily in Bolivia for use by project personnel.

7.5. Provide necessary office space, utilities, telephone facilities, maintenance, and upkeep of such space for USGS personnel while in Bolivia.

7.6. Provide supplies and materials as may be required for USGS personnel while in Bolivia.

7.7. Provide services, when necessary, to obtain clearance in matters which include, but are not necessarily limited to, customs, drivers permits, exit and entry visas, and other services that may involve other agencies of the Government of Bolivia.

7.8. Provide such transportation as may be necessary in Bolivia for the conduct of field activities of specific projects.

7.9. Provide Bolivian counterparts as specified in Project Implementation Plans.

ARTICLE VIII. Administrative Arrangements Governing USGS Personnel.

8.1. Grades and salaries of employees of the USGS under this Memorandum of Understanding shall be determined by the USGS in accordance with applicable U.S. Government regulations.

8.2. Provisions of U.S. Standardized Regulations (Government Civilians, Foreign Areas) relative to differential, allowances, and per diem shall be applicable during the actual period of assignment of USGS personnel to this project.

8.3. Travel of USGS personnel assigned to projects shall be in accordance with applicable U.S. Government regulations.

8.4. USGS personnel assigned to this project shall be exempt from Government of Bolivia taxes, duties, fees or levies which may otherwise be payable, as provided in the Technical Cooperation Agreement signed by the United States of America and the Government of Bolivia on March 14, 1951.

8.5. USGS personnel assigned to this project shall have the following rights:

- a. Immunity from legal process in respect to all acts performed by them in the conduct of this project.
- b. Immunity from Bolivian national service obligations.

(IR)BOL-5

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY



PROJECT REPORT
Bolivian Investigations
(IR)BOL-5

IMPLEMENTATION PLAN
for
BOLIVIAN MINERALS EXPLORATION FUND



U. S. Geological Survey
OPEN FILE REPORT 79-597
This report is preliminary and has
not been edited or reviewed for
conformity with Geological Survey
standards or nomenclature.

Prepared on behalf of the
Bolivian Ministry of Mining and Metallurgy

1978

- c. Bringing into Bolivia of reasonable amounts of foreign currency for purposes of the program or for personal use and the withdrawing of such amounts as may be earned therein by such personnel in the execution of this project.
- d. The same repatriation facilities in the event of international crises as diplomatic envoys.

ARTICLE IX. Financial Arrangements.

9.1. The financial arrangements for each project shall be set forth in specific Project Implementation Plans.

ARTICLE X. General Conditions.

10.1. Period of Memorandum of Understanding. The Memorandum of Understanding shall enter into force on the day of final signing and shall cover a period of sixty (60) months except as the period may be changed by mutual agreement. Any Project Implementation Plan approved before the expiration date of this Memorandum of Understanding but scheduled to terminate after its termination date will remain in force until the termination date of the Project Implementation Plan.

10.2. Rights and Obligations of the United States. The rights and obligations of the United States are strictly limited to the terms of this Memorandum of Understanding and applicable portions of the Technical Cooperation Agreement signed by the United States of American and the Government of Bolivia on March 14, 1951.

10.3. Force Majeure. If either the USGS or the Ministry is temporarily rendered unable, wholly or in part, by force majeure, or laws or regulations, to perform its duties and responsibilities under this Memorandum of Understanding, it is agreed that upon written notice with full particulars of such force majeure, by either the Ministry or the USGS to the other party, as soon as possible after the occurrence of the cause relied on, the duties and responsibilities of the Ministry or the USGS, so far as they are affected by such force majeure, shall be suspended during the period of continuance of such inability so caused but for no longer period, and such cause shall in so far as possible be removed with all reasonable dispatch. The term "force majeure" as employed herein shall mean acts of God, industrial disturbances, acts of the public enemy, civil disturbances, and any other cause similar to the kind herein enumerated or equivalent force not caused by nor within the control of either party, and which neither party is able to overcome.

Neither party shall have responsibility for delays caused by force majeure. During the period of suspension of performance by the USGS or the Ministry caused by force majeure and in respect of work suspended, the USGS may continue to pay normal costs of maintaining project personnel in Bolivia from funds to be reimbursed and/or advanced to the USGS by the Government of Bolivia under specific Project Implementation Plans. During the period of suspension, the USGS shall not incur any unnecessary expenses, and the Ministry shall also exercise its right to cause termination of the assignment of any personnel hereunder. If the USGS is permanently prevented, wholly or in part, by reason of force majeure, from performing under a Project Implementation Plan, the Ministry or the USGS shall have the right to terminate this Memorandum of Understanding upon giving notice in writing to the other party as specified in Paragraph 10.6. hereunder, and in such event the USGS shall have the right to charge repatriation costs for a period necessary for its personnel to depart Bolivia and arrive in the U.S. plus annual leave earned but not used while assigned to a project. Any period of suspension less than 30 days shall be deemed temporary.

10.4. Termination. The Ministry or the USGS may terminate this Memorandum of Understanding or any Project Implementation Plan in whole or in part at any time upon thirty (30) days written notice of termination to the other party. In the event of such termination the Ministry shall be liable to the USGS for the costs of equipment and materials on order that cannot be cancelled, for repatriation costs for a period necessary for the USGS personnel to depart Bolivia and arrive in the U.S. plus annual leave earned but not used while assigned to this project. It is understood that the USGS will use its best efforts to minimize expenses and commitments from the date of receipt of any notice of termination.

10.5. Amendments. No changes in or modifications of this Memorandum of Understanding shall be made except by mutual agreement, in writing, between the Ministry and the USGS. The Project Implementation Plans when approved by both the USGS and the Ministry shall be considered to be an addendum to this Memorandum of Understanding.

10.6. Notices. Any notice given by any of the parties hereunder shall be sufficient only if in writing and delivered in person or sent by telegram or cable or registered mail, postage paid, addressed as follows: ,

To:

Av. 16 de Julio
Telefono 4111
La Paz - Bolivia

To: United States Department of the Interior
Geological Survey
National Center, MS 914
Reston, Virginia, U.S.A. 22092

or to such other address as any of such addressees shall designate by notice given as herein required. Notices hereunder shall be effective when received.

U.S. Geological Survey
By: *J. H. Kolesky*
Title: Acting Director
Date: MAR 21 1975

Ministry of Mines and Metallurgy
By: *(Signature)*
Title: DR. CAELI DON ANTONIO Zelaya
MINISTRO DE MINERIA Y METALURGIA
Date: 25 ABR 1975

PROJECT IMPLEMENTATION PLAN

P.I.P. N° BOL - I

MINERAL EXPLORATION FUND

PROJECT IMPLEMENTATION PLAN

Bolivia
(COUNTRY)

Technical Assistance in Mineral Exploration and Development
(PROGRAM)

Mineral Exploration Fund
(PROJECT)

Section I. Scope.

Project Implementation Plan No. BOL-1 is entered into this 25
day of ABR 1975 between the Ministry of Mines and Metallurgy,
Government of Bolivia (hereinafter referred to as the Ministry), and
the U.S. Geological Survey of the Department of the Interior, Govern-
ment of the United States (hereinafter referred to as the USGS) pursuant
to the provisions of the Memorandum of Understanding between the Ministry
and the USGS for Technical Assistance in Mineral Exploration and Develop-
ment signed by the Ministry on 25 ABR 1975 and the USGS on
21 MAR 1975. The Ministry has requested USGS assistance in
establishing a mineral exploration fund.

Section II. Purpose.

The purpose of this activity is to help define the operating
procedures, institutional arrangements, and staffing requirements for
administering a proposed Mineral Exploration Fund. This fund will help
promote the development of Bolivian mining by assisting indigenous mine
operators to explore, develop, appraise and exploit their mineral
deposits.

Section III. Procedure.

Under this activity, the USGS will provide qualified specialists
to carry out activities cited herein.

Phase 1. Preliminary evaluation and planning.

1. As soon as possible after the Project Implementation Plan has
been executed, the Ministry will provide to the USGS:
 - a. a statement outlining the Bolivian Government organizations
responsible for administering national policy to develop
and exploit the mineral resources of Bolivia;
 - b. a copy of the Bolivian mining code;

- c. any additional available information pertaining to the Bolivian mining sector that might be useful to the preliminary evaluation and planning for the proposed Mineral Exploration Fund.

2. After the USGS has studied these documents, a USGS specialist assigned to the project will make an initial visit to Bolivia for several weeks to:

- a. review the current exploration situation and practices of the mining sector;
- b. evaluate the need to stimulate and expand mineral resources exploration;
- c. evaluate Bolivian capabilities in terms of trained personnel, private companies, equipment and finances;
- d. consider means by which exploration could be stimulated and expanded;
- e. formulate with Bolivian officials, a general plan and recommendations for implementing the Fund which shall include:
 - (1) establishing the responsibilities, staffing requirements, administrative arrangements and organizational structure to conduct activities authorized under the Fund;
 - (2) identifying the Bolivian agency which will administer the Fund.

3. Upon returning to the U.S., the USGS specialist will prepare detailed recommendations for implementing a Mineral Exploration Fund, including requirements for possible additional USGS assistance, and forward them to the Ministry.

4. If necessary, the USGS specialist will return to Bolivia to provide additional assistance as required.

5. Phase 1 activities may require not more than four (4) man-months of the specialist's services.

Phase 2. Implementation of the Fund.

Based upon the operating plan developed under Phase 1, the USGS will provide, as may be mutually agreed, specialists to assist the Ministry in undertaking initial operation of the Fund. USGS specialists will visit Bolivia as required to help resolve problems or to make further study. Such activities (including scheduling and financial arrangements) will be defined in correspondence, which, when approved, will amend this Project Implementation Plan as provided in Article X.10.5 of the Memorandum of Understanding signed by the Ministry on 25 APR 1975 and by the USGS on 11 MAR 1975.

Section IV. Financial arrangements.

The costs of the tasks to be performed by the USGS as outlined herein shall be paid from funds provided by the Ministry as set forth below.

1. The Ministry agrees to advance the USGS an amount equal to fifty per cent (50%) of the total budget estimate (Attachment A) not later than twenty-one (21) days after this Project Implementation Plan is approved by the Ministry. The advance shall be in the form of a United States dollar check, payable to the U.S. Geological Survey and forwarded to the U.S. Geological Survey, National Center, MS 914, Reston, Virginia, U.S.A. 22092.

2. The Ministry agrees to reimburse the USGS for the actual cost of the services less the amount advanced as provided in (1) above, not later than sixty (60) days after receipt of the final report by the Ministry.

The amounts cited in the budget estimate (Attachment A) are based on the estimates of salary, allowances, and other expenses of the USGS personnel and upon current prevailing costs; however, if actual costs increase by 10% or more than estimated in Attachment A, the amount to be reimbursed and/or advanced will be renegotiated. If the increase is estimated to be less than 10%, the Ministry agrees to reimburse the USGS for actual costs without renegotiation of the amount.

Section V. General.

1. Period of Project Implementation Plan. This Project Implementation Plan shall become effective as of the final date of signing by the two parties, and shall cover a period of twelve (12) months, but may be extended in accordance with Article X.10.1 and 10.5 of the Memorandum of Understanding signed by the Ministry on 25 APR 1975 and the USGS on 11 MAR 1975. The period of this Project Implementation Plan shall commence and be conducted according to the time table established by the Technical Committee.

2. The Articles of the Memorandum of Understanding signed by the Ministry on 25 APR 1975 and the USGS on 21 10 except as amended or modified herein, shall be applicable to this Project Implementation Plan.

U.S. Geological Survey
By: *J. K. Maloney*
Title: Acting Director
Date: MAR 21 1975

Ministry of Mines and Metallurgy
By: *[Signature]*
Title: [Faint text]
Date: 25 APR 1975

ATTACHMENT A

Budget Estimate
(Initial trip)

1. Salary: 4 months	\$16,000
2. International travel costs:	1,000
3. Per diem in Bolivia	3,900
4. Administrative and Technical Support	<u>5,225</u>
	\$25,125

**CODICE
DE
MINES**

Appendix B

LA PAZ - BOLIVIA

CODE OF MINES

BOOK ONE

PRINCIPAL RULINGS

TITLE I

DOMINION OF MINERAL SUBSTANCES

Chapter I

Dominion

Article 1: All mineral substances, whatever may be their origin or the formation of the ore deposits found underground or on the surface of the earth, are under the dominion of the State.

Article 2: The mining concession constitutes a right different from that of the ownership of the land where the concession is located, even if both the concession and the land belong to the same person.

Article 3: The State will grant the right to explore, exploit, treat and smelt the mineral substances to natural or juridical persons who may apply for such right in accordance with the regulations established by this code.

Article 4: All mining grantees are subject to the laws and courts of justice of the country. Should they be foreigners, it will be taken for granted that they relinquished any diplomatic claim they may have related to the concessions granted to them.

Article 5: Priority in applications for land exploration, exploitation and for the working of dumps, slags and washings gives preference rights. Said priority has legal force for the acquisition of mining rights and it continues in force even after the property title, provided that work and production are evident.

Article 6: Exempted from the regulations of the present Code are petroleum and other hydrocarbon substances and medicinal mineral waters, which are subject to special laws. The superfluous

cial deposits of common salt, the alluvial and eluvial deposits of gypsum, lime, quarry stone and ochres are also under the State dominion but the owner of the land will have priority for the concession. Said priority will be considered as waived if, once notified with the application of a third party, the owner does not exercise his priority right within the term of sixty days.

Article 7: Exploration, exploitation, beneficiation, smelting and other mining operations will be considered as of public utility presumably within the perimeter of the concession. Beyond said perimeter and subject to proof submitted to the respective authorities, the utility of the above mentioned operations for the mining activities in general will also be recognized.

Article 8: Mining concessions, as well as the goods required for and employed in mining operations in a permanent way, such as machinery, tools, equipment, animals and vehicles will be considered as real estate during the time that they are within the perimeter of the concession.

Article 9: Mining concessions are not liable to material division and can only be virtually divided through the issue of shares.

Article 10: A mining register will be established in which all deeds, contracts and resolutions of a mining character will hereafter be registered as provided by the regulations of Book II of this Code.

Chapter II

Classification of Mining Activities

Article 11: For the purpose of applying the present Code, mining activities are classified as follows:

- a) Air Surveying. - Consisting of the surveying operations of extensive areas of land through aerophotogrametric and other methods carried out with the purpose of drawing maps and locating zones or regions favorable for future mining

exploration and exploitation or both at the same time, with due respect for the national sovereignty and security and in accordance with the laws of the country.

b) Land Exploration. - Consisting of superficial and underground works with the purpose of discovering mineral deposits through technical and scientific research, such as geophysical, geological, seismological, gravimetric and other methods.

c) Prospecting. - Consisting of small preliminary work in search of mineral substances.

d) Exploitation. - Consisting of the extraction of mineral substance out of the ore deposits and the utilization of dumps, slags and washings.

e) Treatment. - Consisting of the treatment of minerals with the purpose of raising their grades and, thereby obtaining a favorable economic recovery.

f) Smelting. - Consisting of pyro-metallurgical treatment of concentrates with the purpose of obtaining metallic products.

Chapter III

Rights of Persons

Article 12: For the purpose of the present Code all natural or juridical persons whose existence and activities are ruled by the laws of the country are endowed with legal rights.

Article 13: Foreign States and Governments, as well as Corporations and other entities dependent from them cannot exercise mining activities nor acquire any mining rights, under no circumstances or title, be it directly or through third persons, nor can they be accepted as partners.

Article 14: Foreign natural or juridical persons cannot acquire or own any of the rights acknowledged by the present.

Code within fifty kilometers from the international boundaries of the national territory except in case of national necessity declared through special law.

Article 15: Neither can the following officials of the State acquire mining rights, either personally or through third persons:

a) Within the national territory:

The President and Vice-President of the Republic, the Ministers of State, the Comptroller General of the

Republic, and Ministers of the Supreme Court of Justice,

the Senators and Deputies, the officials and the General Attorneys of the Republic, the officials and employees of the Ministry of Mines and Petroleum, the officials of the Ministry of Planning and Co-ordination, the officials and technicians of the Mining Corporation of

Bolivia and its exploration and prospecting contractors, the officials of the National Smelting Corporation, the President, General Manager, members of the Board of

Directors and staff of Banco Minero de Bolivia, the members of the National Court of Mines and the Attorney General of Mines.

b) Within the jurisdictional territory, in which they exercise their functions:

the Prefects and Sub-Prefects, the President and Ministers of the Superior Courts of Justice, the Superintendents of Mines and their subordinates, the Notaries of Mines and their subordinates, the officials, engineers and topographers of the Technical Service of Mines, the Agents and the Officials of the State mining entities, the members of staff of the Banco Minero de Bolivia and the members of the Army and Police force with territorial command.

c) The managers, employees, tenants and workman of exploitation grants within a perimeter of two kilometers from the concession in which they work.

d) The husbands and wives of officials and employees with legal power referred to in the aforementioned clauses and their first grade ancestors and descendants.

Article 16: The prohibitions referred to in the preceding articles do not comprise the mining rights acquired either before or after the exercise of the respective functions; in the latter case, the prohibitions will be maintained during three months after cessation of said functions.

Neither are comprised the mining rights of the husband or wife of the persons who are disqualified to exercise such rights acquired through legal succession, legacy, or prescription.

Article 17: Transgressors of the regulations established by this Chapter will be deprived of all the rights they may have acquired and the concession will revert to the dominion of the State either ex officio or through denouncement of a third party. In the latter case, the denouncer will have priority right for adjudication.

Chapter IV

Fiscal Reserves

Article 18: For the purpose of carrying out census and taxation work or in order to undertake exploitations through special contracts or other motives of the State, the Executive Power may declare certain mining areas to be under fiscal reserve with due respect of pre-established rights. The total or partial lifting of such reserves will only be effected through a special legal resolution.

Article 19: Fiscal reserves established for census and taxation purposes will have a maximum duration of two years computable from the date of the pertinent Supreme Decree. Upon expiration of said period the fiscal reserve will be suspended "ipso-facto" with no need of special provision.

Article 20: Exploitations within fiscal reserves will be authorized by special legal provisions which will determine the conditions and characteristics of each exploitation and treatment of

the mineral substances existing in said reserve zones.

TITLE II

STATE AND PRIVATE MINING INDUSTRIES

Chapter I

State Mining Industry

Article 21: The national mining industry is constituted by the State and the private mining industries.

The State mining industry is integrated by the *Corporación Minera de Bolivia*, the *Banco Minero de Bolivia*, the *National Smelting Corporation* and other State mining entities.

Article 22: The *Corporación Minera de Bolivia* is a self-governed State entity with power to manage:

- a) the mines nationalized by virtue of the Supreme Decree and Law enforced on October 31, 1952.
- b) the dumps, slags and washings of the concessions and mining camps which constitute the nationalized mining groups.
- c) the concessions it may acquire in accordance with the regulations of the present Code.

The organization and activities of *Corporación Minera de Bolivia* are ruled by the Supreme Decrees enforced on July 7, 1955 and July 19, 1956 and the amendments and complementary provisions which may subsequently be enforced.

Article 23: the proprietorship rights of the mines operated by *Corporación Minera de Bolivia* do not expire as private mining concessions do and they can only be transferred through the enactment of a law specifically authorizing such transference.

Said *Corporación Minera de Bolivia* may obtain concessions in the same manner in which natural or juridical persons proceed.

The concessions that the aforementioned entity may obtain subsequently to the promulgation of this Code will expire in the same way in which ordinary concessions terminate.

Article 24: *Corporación Minera de Bolivia* may lease some of its concessions or mining properties or exploit them in partnership with third parties subject to the authorization of the Executive Power.

Article 25: *Banco Minero de Bolivia* is a self-governed State entity and its specific functions are to promote private mining enterprises and the allied treatment and smelting industries. Said Bank cannot acquire mining concessions through direct claim nor through annulment of rights or any onerous title. The concessions that the aforementioned Bank may obtain through any other title should either be leased or transferred by bid at auction within the maximum term of one year from the appropriation. *Banco Minero de Bolivia* will be governed by the legal provisions that determined its constitution and by its by-laws regulations.

Article 26: The *National Smelting Corporation* is a self-governed State entity whose functions consist in giving advisory assistance to the Government regarding technical and administrative matters related to smelting plants, in studying plans and projects for the installation of smelting plants, in giving administrative and technical advice to the Government, as well as to private smelting plants and in studying plans for the marketing of metals and the sub-products of the national smelting industry.

Chapter II

Private Mining Industry

Article 27: The private mining industry is constituted by private medium and small mining enterprises. The Executive Power will qualify and establish the different categories of said enterprises taking into account the volume of their investments and production.

Article 28: The private mining industry receives the full benefit granted to public utility works. Its activities and investments

are under the protection of the State, provided that the use made of such protection is not detrimental to the public interest.

Article 29: The State's most important function is to explore the national territory with the purpose of discovering mineral deposits for future exploitation and utilization by the State and the private mining industries.

Article 30: The State may grant exploration concessions to whoever may request them in accordance with the regulations of this Code.

Chapter III

Aerial Surveys

Article 31: The State has the exclusive power to authorize aerial surveying. However, the Executive Power may, by virtue of a Supreme Resolution and with the approval of the National Mining Council, grant special permits to effect exceptional aerial surveys.

Chapter III

Land Exploration

Article 32: For the purpose mentioned in article 11, b) Mining Superintendents within their jurisdiction will grant the right to explore mineral substances to whoever may request it.

Article 33: The measure unit for exploration concessions is the "perrencia", a solid of pyramidal shape with a square base of 100 meters per side, measured horizontally on the land, the top of the inverted pyramid being on the center of the earth.

Article 34: Land exploration concessions will have a right angled shape with re-entering and out-jutting 90-degree angles. The orientation will be that pointed out by the petitioner.

Article 35: If, due to adjacency reasons, it should not be possible to form right-angled concessions, an irregular shape

will be permitted but with no solution of continuity.

Article 36: Each land exploration concession may cover from two up to 20,000 perrencias (holdings) provided that the concession is granted on free land.

Article 37: Land exploration concessions give the grantee the real and exclusive right to explore for mineral substances during a period of two years, computable from the date of the adjudication; they also give the exclusive option right to obtain, within the exploration area, exploitation concessions as provided by article 52 if they are not located in fiscal reserve zones.

Article 38: At the time of applying for a land exploration concession, the petitioner must pay, for the full period, a patent equal to one half of the exploitation patent.

Article 39: The grantee may request for an extension of the period of his concession for a term equal to one half of that established by article 37, under the following conditions:

a) Reduction of the area to half of its original size, its perimeter to be determined by the grantee according to the respective plan.

b) Previous payment of a patent equal to that established by article 38 for the total additional period.

Article 40: The grantee may, at any time, change his concession into exploitation concessions within the principal or the extended terms granted to him.

Article 41: Subject to annulment, the grantee will not formally start exploitation, during the exploration period but will be allowed to own the substances he may eventually obtain.

Article 42: Land exploration grantees shall not be allowed to explore:

a) Within the perimeter of pre-established exploration or exploitation concessions.

in length or depth. They will own the substances they may eventually obtain from such activity.

Article 49: In order to obtain land exploration and exploitation concessions and carry out workings of dumps, slugs and washings, the prospector must previously legalize his application in accordance with the regulations of the present Code.

Article 50: Articles 41, 42 and 43 are applicable to prospecting activities.

TITLE IV

EXPLOITATION AND TREATMENT

Chapter I

Measure Unit, extension and guide-posts of the Concessions

Article 51: The measure unit and the manner in which exploitation concessions are granted are the same as those established by articles 33, 34 and 35.

Article 52: At the time of changing his exploration concession into one or more exploitation concessions, the grantee may reduce the explored area if he deems it convenient.

Under annulment sanction, the areas selected for exploitation cannot be larger, as a whole, than twenty thousand pertencencies (holdings).

Article 53: The total sum of the areas for each direct exploitation grantee will, under no circumstances, exceed twenty thousand pertencencies.

Article 54: Neither shall the mixed exploration concessions, changed into exploitation and direct exploitation, exceed a total of twenty thousand pertencencies for each legal association or corporation.

Article 55: The areas referred to by articles 52, 53 and 54

b) Within towns, cemeteries and public or private buildings and gardens.

c) Within cultivated or fenced plots.

d) Close to isolated buildings, roads and channels, pipe lines, railroad tracks, electro-power motive lines, telephone or telegraph lines, public buildings, historical monuments and other similar public works within a distance of fifty meters.

e) In the vicinity of fortresses, power deposits, arsenals and military barracks, within a distance of one thousand meters.

Article 43: A special written permit from the competent authorities or the owners of the land is required to carry out exploration work within distances of fifty up to one thousand meters established by the preceding article.

Article 44: Land exploration grantees are obliged to indemnify any damage or harm caused to the owner of the land by the above mentioned exploration work.

Article 45: Subject to annulment in case of infraction, exploration grantees must start working within a term not exceeding six months, computable from the date of the Decree of adjudication. They must also forward semi-annual reports concerning the development of their work to the Ministry of Mines. Non-forwarding of said reports will be sanctioned by a fine.

Article 46: Once that the term of a land has expired, neither the grantee nor his intermediaries can be granted another exploration concession either for all or part of the previous one.

Chapter IV

Prospecting

Article 47: Any person can prospect freely on free land, as established by article 11, clause a).

Article 48: Prospectors should not dig more than ten meters

will be constituted by adjacent or isolated concessions with areas not exceeding the limits established by the aforementioned articles.

Article 56: Should there be a free space between two or more concessions not large enough to constitute a pertenenencia, even though it may measure 10,000 square meters, such free space shall be considered excess land.

Article 57: Said excess land shall be granted to the adjacent grantee who may first solicit it and, should said adjacent grantee relinquish his right, to any other person. It will be presumed that the adjacent grantees relinquished their rights on the excess land if, thirty days after being notified or a petition by a third party, they should not apply for adjudication.

Article 58: For the land-marketing of an exploration or exploitation concession, the technical authority will order that consistent guide-posts be used, which by their shape or some signal should be obviously different from the guide-posts of the adjacent concessions. Should the sizes of the rectangle be too large or in case that it should not be possible to use evidence guide-posts, these will be placed in the most prominent points of the region.

Article 59: Exploitation grantees and those of dumps, slags and tailings are obliged to take good care of the starting and reference points, as well as of the guide-posts of the perimeter of the concession, under sanction of immediate replacement and fine, apart from the respective penal action in case of infraction.

Chapter II

Mining Exploitation Concessions

Article 60: The Superintendents of Mines will grant the right to exploit mineral substances to whoever may first solicit it for the purposes pointed out in article II, clause d).

Article 61: The exploitation concession gives the grantee the real and exclusive right to exploit, treat, smelt and indef-

initely profit by the mineral substances he may obtain within the perimeter of his concession, subject to payment of patent, the continuity of workings and all the other obligations established by this Code.

Article 62: Exploitation grantees will pay an annual patent per pertenenencia, in accordance with the following scale:

Number of Pertenenencias	\$b. per pertenenencia
Up to 5,000	1.20
" " 10,000	2.40
" " 15,000	3.60
" " 20,000	4.80
Over 20,000	6.00

Advance payments will be made for two semesters.

Article 63: Exploitation concessions will be given on free land even if no minerals are discovered nor any work is effected.

Chapter III

Concessions for abandoned Dumps, Slags

and Tailings

Article 64: Dumps, slags and tailings constitute accessory property of the exploitation concession and the treatment of smelting plants from which they originate, even if they are located on free land.

Article 65: Abandoned dumps, slags and tailings will be adjudicated by the Superintendent of Mines to whoever may first solicit them.

Article 66: Dumps, slags, and tailings will be considered abandoned.

a) If they proceed from an exploitation concession which

reverted to the State dominion.

- b) Those from treatment or smelting plants which ceased to work for a period of two years, excepting "force majeure" duly justified.
- c) Whenever it should be impossible to determine their origin.

Article 67: Grantees for dumps, slags or tailings will confine themselves, exclusively, to profit by the superficial substances and shall have no right to exploit mineral deposits within the perimeter of their concessions either on the surface or the subsoil.

Article 68: Dumps, slags and tailings will be adjudicated by hectares, as indicated by Book II and during the time required for treating said residues, subject to payment of patents, continuous working and fulfillment of their obligations established by this Code.

Article 69: Grantees for dumps, slags and tailings will pay an annual patent equal to that established for exploitation grantees.

Chapter IV

Mineral Treatment Plants

Article 70: The Ministry of Mines will grant the right to install mineral treatment plants to whoever may solicit it.

Article 71: The land belonging to the State required for the construction and operation of mineral treatment plants will be granted free of charge.

Article 72: Treatment plants may treat minerals belonging to the proprietor of the treatment grantees on the basis of payment per treatment.

Article 73: Treatment plants can only treat minerals from established mining enterprises actually producing said minerals.

Article 74: Managers of treatment plants have all the rights referred to by Chapter I, Title V of this Book and, therefore, they can establish the same servitudes allowed exploitation grantees.

Chapter V

Mineral Smelting Plants

Article 75: The State will endeavor to achieve the integration of the national mining industry with the establishment of smelting plants.

Article 76: Private smelting plants can also be established with the authorization of the Ministry of Mines subject to previous report from the National Smelting Corporation and following the procedure established by this Code.

Article 77: Smelting plant grantees will be given all the rights and privileges granted to exploitation grantees as provided by this Code.

The State will guarantee the supply of raw materials to the legally authorized smelting plants who will pay to the suppliers equal or higher prices and grant them equally favorable terms than those offered by foreign smelting plants.

TITLE V

RIGHTS AND DUTIES OF THE GRANTEES

Chapter I

Rights of the Grantees

a) General Rights

Article 78: The Adjudication Decree gives the grantees for exploration, exploitation and working of dumps, slags and tailings the rights to explore, exploit and profit by the production of the mineral substances of their concessions except in cases of proven legal opposition, caducity and nullity established by this Code.

Article 79: No authority can order the suspension of mining works, under sanction of payment of damages caused to the grantees, except when such suspension is due to trespass or trespassing of bounds of if it is deemed necessary for public safety, the protection of the mining concessions or the health and safety of the workmen.

Article 80: Neither the mining concessions nor their products or installations are liable to attachment or law-suits. However, while legal procedure is being carried out, one or more supervisors may be appointed as provided by article 186.

Article 81: The grantees for exploration, exploitation and working of dumps, slays and tailings and those for treatment and smelting plants will have, as domicile, the site of their activities. The persons who were granted licenses for air surveys will have, as domicile, the seat of the Government.

Article 82: In case of calucity denunciation of a concession for exploration, exploitation or workings of dumps, slays or tailings, the right of the denouncer includes everythings acquired by the original grantee through expropriation and servitude without encumbrances for the denouncer.

For the concession the denouncer will acquire, subject to indemnification, rights upon the buildings existing on the site, provided that they are annexed to the works of the concession, excluding machinery and equipment, which may be freely laid aside by the original grantee or transferred by mutual agreement of the parties.

Article 83: While any kind of concession is in force, the grantee can construct buildings, camps, deposits and aqueducts; install pumping and electro-motive power, tubes, electric transmission lines, telephone lines and other communications systems; construct roads and local transport systems within the limits of the concession, subject to the regulations of this Code and the ordinary laws. Should the concession be for exploitation the grantee can also install concentration and treatment plants, metallurgical plants, construct channels and other shipping systems and, in a general way, carry out all

the necessary workings for a reasonable development of the exploitation.

Article 84: Exploitation grantees and those for dumps, slays, and tailings, as well as treatment and smelting plants will have the right to the free use of public Dominion lands not cultivated or fenced, within the perimeter of their concessions, as well as to the use, free of charge, of the grass, wood, buildings materials, lumber and peat for domestic use.

b) Rights Upon Waters

Article 85: Grantee, in general, will have the right to use the waters that run freely through their concessions, either to produce hydraulic energy or for any use applicable to exploration, exploitation, treatment or smelting of minerals, subject to the obligation of restoring them to their river bed after using them.

Article 86: Should the waters needed by the miner be of private dominion, he can use them, subject to previous agreement with the land-owner or after the expropriation procedure established by this Code has been fulfilled. No expropriation of waters will legally proceed if it would cause damages to towns.

Article 87: Should the waters used by the miners and restored to their river beds become useless for irrigation, said miners will have to indemnify the land-owner for the damages caused thereof.

Article 88: Whenever the land-owner should desire to change the course of the running waters, he will give notice of it to the mining grantees of the region. Should said grantees, within the term of ten days from the notification, fail to demand from the authorities the right to use such waters, their attitude will be considered as a waiver of their rights.

Article 89: The superficial waters belonging to a concessionaire, acquired through any title, can be expropriated in favor of another grantee who may need them but only when the first grantee has used them for his own industry.

Should the first grantee not use the waters for the time

being, the second grantee will have the right to demand the first one to point out the site where he intends to install his machinery in the future in order to use the volume of water he should need with due respect of established rights.

The third, fourth and subsequent grantees can proceed in the same manner as the previous ones according to their priority rights. Any controversy or discussion that may result will be solved in the same manner in which expropriation differences are settled.

Article 90: The grantee who should find in his concession an underground current or water seepage will become the real owner of said current and, thereby, will use it as he may deem convenient and change its course whenever he should consider it necessary provided he does not cause damages to the adjacent mining workings.

The neighboring grantees can profit by the waters sprung out from an adjacent concession when the owner has stopped using them.

The right to use spring waters sprung out in an adjacent concession prescribe in favor of the grantee who is actually using them when the owner has stopped using them during six months.

Article 91: The grantees for exploration, exploitation and workings of dumps, slags and tailings, as well as those for treatment and smelting plants who should need public dominion waters must carry through and adjudication procedure as provided by the regulations of Book II of the present Code.

c) Administrative Protection

Article 92: The sub-Prefect of the Province will protect the possession of the grantee in case that said grantee should complain of spoliation in spite of having legal ownership or title. To qualify the alleged spoliation the dispossessed grantee must be actually working.

The ordinary Courts of Justice will try each case when

both grantees have perfect title.

Article 93: Likewise, the Sub-Prefect will protect the grantee whose rights are clearly shown by an adjudication decree or property title whenever said grantee's property should have been arbitrarily occupied or worked without legal title. Such protection will also be effective against disturbances caused by persons or authorities without legal power or capacity.

d) Opposition

Article 94: Exploitation as well as exploration grantees in non-surveyed districts can allege opposition based upon priority rights, lack of free land or superposition when new claims for concessions are made upon their own concessions for exploration or exploitation or workings of dumps, slags and tailings.

Likewise, grantees for dumps, slags and tailings may allege opposition for the same reason only with reference to similar petitions.

Article 95: In case that the superposition should be partial, the petitioner will be granted the undisputed area and consequently, the opposition will only involve the disputed area.

In surveyed districts, provided that the petition was made for free land, no opposition will be admitted.

Article 96: Oppositions will be alleged before the Superintendent of Mines in accordance with the regulations of Book II of this Code.

Chapter II

Duties of the Grantees

a) General Duties

Article 97: Grantees and their managers are obliged to take care of the life and health of their workers and see that they are not in danger; that public peace is not disturbed and the

safety of the neighboring mines is not menaced and the stability of the land and buildings is not endangered.

Article 98: Subject to annulment if their concessions in case of nonfulfillment, grantees are obliged to start operations within the following terms:

- a) Those for land exploration within six months of the adjudication decree.
- b) Those for exploitation within one year of the adjudication decree.
- c) Those for dumps, slags and tailings within six months of the adjudication decree.

Article 99: Subject to annulment in case of non-fulfillment, grantees should not interrupt workings, as pointed out below:

- a) Those for exploration for more than six months.
- b) Those for exploitation for more than two years.
- c) Those for dumps, slags and tailings for more than six months.

All the above terms are understood to be continuous.

Article 100: If due to justified force majeure or unfavorable market conditions the interruption of operations should last longer than the established terms, the Superintendent of Mines will grant successive extensions for equal periods of time, provided that the grantee justifies the reason for such extensions.

Article 101: Mining exploitation concessions will not lapse or become void due to the grantee's failure in starting operations or interrupting them, as provided by the aforementioned articles if such concessions constitute part of a mining group as, in that case, the exploitation of any of the other concessions belonging to said group would imply the fulfillment of the regulations established by clause b) of articles 99 and 100. A mining group is understood to be constituted by various conces

sions, which belonging to one person or legal corporation is subject to a coordinated working plan and a centralized administration. The Technical Mining Service will qualify said mining groups in each case.

Article 102: Grantees, in general, are obliged to carry out their operations according to methods and techniques which are not liable to cause damages to the land-owner or the adjacent grantees and to indemnify such damages if they should occur.

Article 103: Grantees for exploration, exploitation and workings of dumps, slags or tailings, as well as those for treatment and smelting plants are obliged to pay the corresponding patents and royalties.

Article 104: Exploitation grantees, as well as those for dumps, slags and tailings will keep folio-books showing the amount of minerals produced every month. Said book will be at the disposal of the respective authorities.

Article 105: Mining grantees, in general, are obliged to give to the authorized officials of the Ministry of Mines or their regional dependents free access to all the installations of their properties and to supply them with the technical and statistical information they may require.

b) Patents

Article 106: To keep up their rights exploration and exploitation grantees, as well as those for workings of dumps, slags and tailings are obliged to pay the patents established by this Code, under annulment sanction of said rights in case of infraction. Payment will be effected by fixed semesters by all grantees in a uniform way, namely, from January 1st. to June 30th. and July 1st. to December 31st. every year.

Patents will be paid independently from the royalties established by special regulations.

Article 107: Exploration patents will be paid as provided by articles 38 and 39 of this Code.

Article 108: Patents for exploitation applications will be paid for two semesters, in advance, at the time of making the petitions. Thereafter, said patents will be paid in advance during the first month of each semester.

Article 109: In case that patents should not have been paid during the first month of a semester, the amount of said patents will be increased, starting on the following month by the penal interest established by law for the delay incurred in.

Article 110: Exploitation grantees as well as those working dumps, slags and tailings will be considered as overdue patent debtors starting on the date of the pronouncement of the adjudication decree.

Payment of said semi-annual obligation does not require notice from State officials.

Article 111: Grantees shall not be ministered possession of their concessions unless a certificate is presented showing that all patents due since the pronouncement of the adjudication decree have been paid, subject to annulment ipso-jure in case of infraction.

Article 112: The Superintendent of Mines will not order the drawing up of the deed of consolidation of rights nor that of the property title if the forwarded documents do not prove that patents are paid to date.

Article 113: During the opposition procedure the grantee and their opponents will pay the patents corresponding to the pertenencias which they allege to possess.

Article 114: For the purpose of payment of patents excess lands will be considered as pertenencias. Fractions of land not amounting to one pertenencia will be regarded as full-sized pertenencias.

Article 115: In case that the grantee should reduce the number of his pertenencias, he will only be obliged to pay patents for the pertenencias that he may actually retain from his original concession.

Should he exercise his right of waiver of all his concession, he will be exempted from payment of patents starting from the semester in which his waiver was accepted by the Superintendent of Mines.

In both cases, patents will be paid for the whole unpaid period, including the semester during which the reduction became effective.

Article 116: Payment of overdue patents will be effected by the new grantee, provided that he did not obtain the concession through legal annulment denouncement, in which case he will only pay patents starting from the semester during which his petition was legalized.

Article 117: The exploration grantee who abandoned his workings before the term established by article 37 is not entitled to reimbursement of paid patents. Should he change part of his concession into an exploitation concession, he is obliged to pay the patents corresponding to the latter concession.

c) Tax Regime

Article 118: Mining operators, in general, will only pay one tax or royalty, in substitution of all other taxes at the time of exporting their products applying the scales fixed by the State for each mineral or metal on the basis of their fine content and the international price. Said payment will be effected at the Custom House at the time of obtaining the respective export policies.

Article 119: The grantees of treatment or smelting plants who treat their own minerals or export minerals acquired from other producers will pay export royalties as provided by the preceding article.

Article 120: The payment of the only tax or royalty will liberate the grantee from all other national, departmental or municipal taxes with the exception of the Total Complementary Tax.

TITLE VI

CONCERNING RELATIONS OF THE GRANTEES WITH THE STATE, WITH THE SURFACE OWNER AND WITH OTHER GRANTEES, DIRECT AGREEMENTS, SERVITUDES AND EXPROPRIATION

Chapter I

Relations of Grantees

Article 121: All grantees have relations with the State, with the land-owner and with the adjacent grantees, which are regulated by the following articles:

Article 122: The grantees will make arrangements with the land-owners with regard to the extension of land they will need for houses, storerooms, workshops, treatment and smelting plants, rubbish deposits, water reservoirs, construction of deposits for dumps, slags and tailings and other uses required for exploration, exploitation, treatment and smelting operations. Arrangements must also be made between grantees and the land owners with regard to the use of other necessary elements.

Article 123: The roads built to promote the mining industry are of public use. The maintenance expenses of said roads will be divided on a pro-rata basis among the miners of the district.

Article 124: With the permission of the owners, grantees will be given access to the neighboring galleries and tunnels. Should the owners deny such permission, the competent authorities will grant it in the following cases:

- a) When there is reasonable fear that adjacent workings have reached water.
- b) If it is presumed with good evidence of proof that said adjacent workings may cause damages to the neighbors who request entrance.
- c) In case that the landslide or deterioration of a working should be more easily repaired through the adjacent work-

ing even if said repair requires an opening for communication, which will be effected at the expense of the party who requested said entrance.

Article 125: In case that landslides or obstructions of work should occur leaving workmen isolated, the miners working within as far as 5 kilometers around said workings must compulsorily co-operate in the work carried out to rescue them.

Article 126: In case that damages should be caused by the accumulation of water in a concession or in adjacent concessions, the damaged grantee will demand from his neighbor, responsible for such accumulation or his representative that he immediately proceed to empty the water within 48 hours. Said work will be made without interruption until complete drainage is obtained. This demand can be made through a competent authority or directly in case of urgency either verbally or in writing in the presence of two witnesses.

Article 127: If no drainage should be started within the above mentioned term of 48 hours, as provided by the preceding article, the competent authority will have the work done at the expense of the grantee who evaded his obligation, thus becoming liable for payment of the damages resulting therefrom.

Article 128: Whenever a transgression in workings or trespassing into another exploitation concession should be denounced, the Sub-Prefect of the Province, assisted by an engineer acting for each contending party, will order, in view of the official plans and the adjudication decree or title, the suspension of workings in all the area within the limits established by the engineers by common agreement. Then within 48 hours, the Sub-Prefect will forward the proceedings to the Superintendent of Mines for the final solution of the controversy.

Article 129: The exploitation grantee who should have trespassed into another mining concession will be obliged to reimburse the value of all the minerals that were exploited according to the appraisers report. If the trespassing should exceed ten meters, it will be considered as an act committed in bad faith and the trespasser will be punishable for robbery.

Article 130: If the exploration or exploitation of a concession should be carried out underneath rooms or buildings the grantee is liable to be compelled to give a guarantee to compensate for the damages he should have caused.

Chapter II

Servitudes

Article 131: Exploitation grantees shall have the right to establish in adjacent concessions ventilation and tunnel servitudes whenever deemed necessary for the prosecution and maintenance of their workings. The expenses will be borne by the beneficiary grantee. Should he find usable minerals, these will belong to the mine grantee without cost to him.

Article 132: Mining concessions, in general, are subject to the servitude of the natural passing of waters proceeding from other concessions down to the general outlet, provided that said waters must necessarily pass through the servant concession.

Article 133: Should the crossings of a concession require a special ditch, this will be constructed at the expense of the dominant concession.

Article 134: Servitudes prescribe in favor of the dominant after a term of six months from the date in which they were established. The legal action that the owner of the servant concession may take to obtain indemnification prescribes within the same term of six months.

Article 135: Servitudes lapse together with the dominant concession in the special cases determined by this Code.

Chapter III

Expropriation

Article 136: In case that the parties should not come to an agreement, the grantee may expropriate from the land-owner the surfaces of land necessary for the constructions referred

to by article 122. Said expropriation may also become effective beyond the perimeter of the concession. Likewise, the grantee can also expropriate from the adjacent miner the space he may need to establish passages for drainage and transportation purposes.

Article 137: No previous declaration shall be required when the land to be expropriated should be located within the perimeter of the concession.

Article 138: The owner or grantee of the servant land can totally or partially recover the expropriated land in case that all or part of said land should have been destined to a different use than that authorized for expropriation or servitude.

Article 139: If the concessions, in general, should change ownership due to denouncement, the provisions of article 82 will remain in force. However, if no denouncement is made by third parties and said concession should be reverted to the State dominion, those who suffered expropriation will regain their full upon the expropriated land, free of charge.

TITLE VII

EXTINCTION OF MINING CONCESSIONS

Chapter I

General Regulations

Article 140: The rights of persons upon mining concessions, in general, cease to exist due to the following causes:

Chapter II

Reduction and Waiving

Article 141: The exploitation petitioners who should have forwarded their petitions plans will be permitted to reduce the number of their mining claims at the time of submitting said petitions.

Article 142: Exploration grantees, as well as those for exploitation including dumps, slags, and tailings, can waive their claims, either totally or partially, at any time, provided that said waiving does not effect the rights of creditors, tenants or partners.

Article 143: Likewise, with due allowance for third parties rights, exploitation grantees with property title can, at any time, waive their concessions either partially or totally.

Chapter III

Caducity

Article 144: Caducity brings forth extinction of mining rights and it occurs as a result of the causes determined in this Code.

Caducity may be Ipso-facto or Ipso-jure.

Article 145: Ipso-facto caducity occurs when the land actually reverts to the dominion of the State with no need of an specific decree or a third party denouncement, the procedure to be followed in this case being that of filing papers with a nota attesting this fact. Said land may be granted to another petitioner.

Article 146: Ipso-facto caducity in exploitation concessions occurs:

- a) When the interested party gives up proceedings or does not continue any of the steps of said proceedings during six months from the date of the petition until the drawing up of the property title,
- b) If, in spite of having been notified with the decree that grants him forty days to forward the plans, he does not fulfill such requisite.
- c) If, once that the Ipso-jure caducity of a concession is declared and priority is acknowledged in the caducity decree, the denouncer does not legalize his petition within five days after being notified of said decree.

d) If the interested party does not clear out the objections of the Fiscal Attorney within thirty days in the case contemplated by article 151.

e) If the concessions were granted or are in the process of being granted to a foreign company whose legal status should have been denied.

Article 147: Ipso-jure caducity will be presumed to exist when, through a third party denouncement, the concessions reverts to the State dominion. Said caducity will be declared by a special decree. The concession may then be adjudicated to the denouncer as provided by this Code.

Ipso-jure caducity operates in the cases mentioned in the following articles:

Article 148: The right granted by the adjudication decree lapses when the exploitation grantee does not request within the term of 40 days established by article 241 the performance of the respective measurement, land marketing and possession proceedings.

Article 149: Exploitation concessions lapse in the same way if within the term of 40 days after the publication and extension terms, when requested, the proceedings referred to by the preceding article are not carried out.

Article 150: Exploitation concessions lapse Ipso-jure when the grantee takes possession by violating the regulations established by article III.

Article 151: If, during the measurement proceedings the technical authority should not find conformity between the starting or reference points with those shown in the plan, in such a way that the variation of direction in bearing should be larger than two degrees and the distance larger than two per cent, the commissionary authority will stop proceedings and the exploitation grantee will have to straighten out this discrepancy within the term of 30 days computable from the day in which the interested party of the fiscal technical report. In this case, the security of the first petition will be maintained.

Article 152: Likewise the rights of an exploitation grantee lapse when he does not make evident before the respective authorities the non-appearance of his opponent within the terms established by articles 148 and 149.

Article 153: The exploitation grantee will urge the approval of the measurement, land marking and possession proceedings within 40 days after the date of the possession subject to caducity sanction, whether or not the documents are returned by the commissionary authority.

Article 154: In cases of ipso-jure caducity the terms established by articles 155, 156, 159 and 160 are irrevocable and will be computable from the date in which the decrees are drawn up, independently from the notifications.

Article 155: Exploitation concessions whenever the grantee does not start workings within one year subsequent to the adjudication decree or in case that, once having started said workings, he should abandon them during two years, thus violating clause b) of articles 98 and 99. To this effect, the periods granted in accordance with article 100 will be taken into account.

Article 156: Concessions for dumps, slags and tailings lapse if, once that the adjudication is issued, the grantee does not start workings within a term of six months or if, after having started said workings, he should abandon them for an equal period of time.

Article 157: Exploitation rights granted by adjudication decrees or property titles expire when the grantee stops paying parcels for two over-due semesters. The same ruling will be applied for the above mentioned cause to grantees for exploitation of dumps, slags and tailings.

Article 158: Should lapsed concessions be subject to joint ownership, caducity will have the same legal sanction for all joint owners.

Article 159: If notwithstanding the caducity contemplated by article 157 the concession through any title should again be

acquired by a patent debtor, the over-due patent obligations will be renewed at his charge. In case that the debtor should fail to meet such obligations, the concession may once more be denounced for caducity.

Article 160: Land exploration concessions will lapse:

- a) For failure in starting workings within the six-months term referred to by article 98, clause a).
- b) For interrupting workings during more than six months violating the regulations of article 99, clause a).
- c) For establishing formal exploitation in contravention of the regulations of article 41.

Chapter IV

Nullity of Concessions

Article 161: The concessions granted in contravention of the regulations of this Code are null. Nullity will proceed ex officio or through denouncement of a third party. In the first case, the Superintendent of Mines will order through a decree the filing of the documents. In the second case, an explanatory decree is required and the reverted concession may again be adjudicated to the denouncement with priority rights as provided by the regulations of article 17.

Article 162: The concessions for exploration, exploitation and for dumps, slags and tailings obtained by the persons mentioned in article 15 are null.

Article 163: Land exploration and exploitation concessions and those for dumps, slags and tailings obtained by foreigners, either directly or through lease or partnership contracts in contravention of article 14 are null.

Article 164: No direct petition can be made for land exploration, exploitation and those for dumps, slags and tailings if said concessions have been previously granted and if no decree was issued declaring that the land is free. In such cases only

caducity or nullity denouncements may be considered. Direct proceedings are contrary to law.

Article 165: Direct petitions will proceed in the following cases:

- a) When the term granted for a land exploration concession has normally expired.
- b) For land exploration, exploitation and workings of dumps, slags and tailings in the cases determined by articles 162 and 163.
- c) In the ipso-facto caducity cases pointed out by article 146 for exploitation concessions.

Any person capable of acquiring mining rights can denounce nullity or caducity as indicated and in accordance with the terms and conditions of this Code.

Chapter V

Prescription

Article 166: Prescription cannot be alleged with regard to exploitation concessions which are under procedure and for which no title has been granted, except in so far as servitudes are concerned as provided by the last part of article 90.

Article 167: Prescription is not applicable to exploitation concessions for dumps, slags and tailings which were not adjudicated by the State and were, thereby, exploited unlawfully.

Article 168: Exploitation concessions and those for dumps, slags and tailings, are prescriptible when the former have property title and the latter have been authorized by a concession decree.

Article 169: The possession time required for acquiring exploitation concessions and those for dumps, slags and tailings, through prescriptions under the conditions established by the Civil Law, shall only be two years and ten years for ordinary

and extraordinary prescription respectively. The right derived therefrom shall become perfect through the respective decree issued by the Superintendence of Mines.

TITLE VIII

MINING CONTRACTS AND PARTNERSHIPS

Chapter I

General Regulations

Article 170: All contracts pertinent to mining such as transfers, leases, loans, mortgages, pledges, constitution or dissolution of partnerships and others, so far as their operation, validity and extinction are concerned, are ruled by the Civil Law and regulations of the Commercial Code in all matters not expressly specified in this Code.

Article 171: Mining contracts to be valid must effected through legal deeds before the Notary of the respective district and registered in the Mining Register. In case that a deed should be extended by another Notary of Mines, it must necessarily be inscribed in the Register of the Notary of the jurisdiction and, should it have been extended by a Notary Public, it must be legalized by the respective Notary of Mines for its registration.

Legally recognized private contracts, in order to become valid must also be inscribed by the Notary of Mines of the jurisdiction. Once having been inscribed, they shall have legal force with regard to third parties. Ownership transferring contracts which must necessarily be granted by public deeds are exempted from this rulings.

Chapter II

Transference and Lease Contracts

Article 172: Mining concessions and rights, in general, are subject to changes amongst living persons or due to death in the same manner as real estate. So whoever acquires rights

must inscribe them in the Mining Register or the Real State Offices.

Article 173: Exploration and Exploitation concessions and those for dumps, slags and tailings are transferable, even if they are under legal procedure, transferences must be inscribed in the Mining Register.

Article 174: Contracts, by virtue of which mining concessions are transferred cannot be rescinded due to injuries.

Article 175: Exploitation concessions and those for dumps, slags and tailings can only be leased after the adjudication decree has been issued. Lease contracts are subject to the ordinary locator laws. The leases cannot subtlet part of the whole concession without special permission from the grantee.

Article 176: In case that a lease contract for exploitation concessions and those for dumps, slags and tailings should not determine the lease fee, it is hereby established that said lease fee will be equivalent to six per cent of the gross production.

Chapter III

Loans, Mortgages and Intervention

Article 177: Loans will be considered as mining loans when they are obtained to be used in mining activities whether these should be for exploration, preparation and exploitation of mineral substances or the installation, enlargement and improvement of mining plants. The installation of their equipment or for any other purpose related to the mining industry. Mining loans will be ruled by the ordinary laws in all matters not opposed to the regulations of this Code.

Article 178: Exploitation concessions and those for dumps, slags and tailings, as well as for treatment and smelting plants can be mortgaged in the same manner as that established for real estate. Therefore, the pertinent loans are subject to the mortgage laws now in force, taking into account the indivisibility of the concessions.

Article 179: The mortgage creditor of a mining concession has legal power to pay patents established by law and the credit from said payment has preference upon all other credits even upon mortgage credits.

Article 180: Mortgage credits contracts must be inscribed in the Mining Register as well as in the Real Estate Register.

Article 181: Debts and encumbrances upon a concession disappear at the moment of expiration of said concession but the personal legal action against the debtor remains.

Creditors have no legal action against the person who through subsequent denouncement, should acquire a concession, unless said concession by means of any title, is reverted to the dominion of the original debtor grantee.

Article 182: In case of a Creditors' meeting the order for payment will be subject to the ordinary laws, except as provided by article 179.

Article 183: Inasmuch as mining concessions are susceptible of mortgage, creditors can carry the attachment or other law suits as far as the public auction of the involved property. In the respective judicial proceedings there will be no embargo nor sequestration. Said proceedings will be substituted by intervention.

Article 184: The basic bid of the auction in coactive and ordinary trials will be the sum due, unless otherwise agreed.

Article 185: Should the miner have mortgaged his concession together with machinery, tools and other implements, considered as real estate on account of their employment, said mines will not be allowed to take the aforementioned machinery or tools out of his concession without the creditors' authorization, except in force majeure cases. Otherwise, the execution will take place and the obligation will be considered as over-due.

Article 186: In cases foreseen by law, the judicial or administrative authority either ex-officio or at the request of the

parties will appoint a Comptroller. This appointment will be revocable for the same causes established by law for the dismissal of the depositary.

Article 187: The functions of the Comptroller, unless otherwise agreed upon before the trial, will be confined to keep an accurate account of the products and expenses originated by the matter under contention, which he will render on due time, duly accompanied by the respective documents. Moreover the Comptroller will closely watch the behavior of the Administrator and see that he duly performs his duties. He will not participate in the direction of the workings or object the execution of said workings, nor oppose those to be carried out or obstruct any administrative operation.

Article 188: The Comptroller will be paid as agreed by the interested parties and should there be no agreement, said payment will be regulated by the authority in charge of the trial considering the work done.

Article 189: The Comptroller shall be held responsible for the commission of any credit or debit items in his account.

Chapter IV

Mining Companies and Cooperatives

Article 190: Joint ownership by request of two or more persons, through partial acquisition of shares, hereditary succession or any other title does not imply the existence of a legally constituted company. The joint owners will be equally responsible for their obligation of repayment of patents to the State. For the effects of caducity or nullity the notifications sent to one of the joint owners will have legal effects for all the others.

Article 191: The obligations that joint-owners may contract with third parties or credit institutions should be accepted by each of said joint owners either personally or through power of attorney.

Article 192: The mining companies established or to be established in the country are subject to commercial laws and, there-

fore, must be constituted through public deeds with the exception of circumstantial societies with which co-partnership accounts are kept for the exploitation of certain areas of the mines. In such cases private contracts can be drawn up.

Article 193: Foreign mining corporations or companies interested in operating in the country must have their legal status acknowledged. For this purpose, they will forward to the Ministry of Mines the following documents duly legalized and translated:

- a) Act of incorporation.
- b) By-laws, if requested in the petitioners countries.
- c) Certificate of payment of, at least 15 of the authorized capital.
- d) Certificate showing that they are constituted in accordance with the laws of their native countries.
- e) Furthermore, they will accredit proxy with full and unrestricted power to carry out their proceedings and business in the country. For this purpose they will constitute their legal domicile within the national territory.

Article 194: While carrying out proceedings to be given legal status the aforementioned corporations or companies may obtain exploration and exploitation concessions, provided that they fulfill the requirements established by causes c) and d) of the preceding article. Should their legal status be denied, such concessions will lapse ipso-facto.

Article 195: In order to legally operate, cooperative mining companies must be constituted as provided by a special law. Furthermore, they should be inscribed in the National Cooperative Register as well as in their District Mining Register.

Article 196: Legally constituted co-operative mining companies shall have the same rights and obligations established by the Code for all mining grantees and private mining enter-

prises.

Article 197: The Directors or members of mining and agrarian cooperatives or syndicates who, without legal title, should be found to be illegally profiting by concessions on their own account or in the name of third parties, shall be held responsible for robbery of minerals and be liable for indemnification of the damages resulting therefrom.

Likewise, the authorities who, transgressing legal regulations should authorize the functioning of cooperatives who make use of concessions not legally owned by them will be considered as despoilers and will be subject to the penalties established by Law.

TITLE II

MINING, PROMOTION AND MINERAL MARKETING

122

Chapter I

General Regulations

Article 198: The State will promote the diversification of the mining industry through the establishment of the treatment and smelting plants.

The activities of Banco Minero de Bolivia will be ruled by the by-laws and regulations enforced by the Executive Power. As the Bank's regulations are primarily intended to promote the mining industry, such regulations are different from those established for commercial banks.

Article 199: The Investment Law and any other regulations connected to or resulting thereof will be applied to the mining activities in all that is not opposed to the regulations of the present Code.

Article 200: The re-investment of profits and dividends in the mining industry will be exempted from all national, departmental or municipal taxes now in force or to be established, including the income tax and the complementary total income tax.

Chapter II

Marketing and Clandestine Grade of Minerals

Article 201: Miners shall have the right to freely sell their minerals abroad or within the country to whoever they may choose with the exception of the small miners who have debts with Banco Minero and are obliged to cover them before selling their mineral production to other buyers. Small miners may also freely export their minerals through and with the authorization of Banco Minero.

Article 202: Miners in general will, preferably, sell their minerals to the national smelting plants under the terms and conditions established by article 203:

Article 203: Clandestine mineral trade is incurred in:

- a) Whenever grantees trade with minerals from other and not their own concessions.
- b) If the sellers, even though they are not miners, buy and sell minerals without legal authorization.
- c) If the sales are made by miners who sell their products to unauthorized persons or entities.

Article 204: Clandestine mineral trade will be sanctioned with the confiscation of the minerals and payment of a fine equivalent to the value of said minerals.

Article 205: The repression of theft and smuggling of minerals is ruled by special laws.

Chapter III

Gold Regime, Precious Stones and Rare Metals

Article 206: Gold, precious stones and rare metal concessions are acquired, kept and expire:

- a) In accordance with the regulations of this Code.

b) As provided by the special contracts subscribed with the State.

Article 207: Non-auriferous deposit grantees who should happen to find gold, precious stones and rare metals may exploit them as provided by article 61.

Article 208: Gold producers are obliged to sell said metal to Banco Minero de Bolivia or Banco Central de Bolivia.

Producers of complex minerals who are unable to make an adequate separation of the gold content are exempted from this obligation.

Subject to previous payment of the legal deductions and treatment charges, the above mentioned buying entities will pay to the producers the equivalent of the international prices.

Article 209: The Executive Power will regulate the control of the production and exportation of gold, precious stones and rare metals.

BOOK TWO

SUPPLEMENTARY REGULATIONS AND MINING JUSTICE

TITLE I

GENERAL REGULATIONS AND MINING REGISTER

Chapter I

General Regulations

Article 210: The receipt of applications for explorations, exploitation and workings of dumps, shafts and tailings will be officially recorded in writing stating the hour, minute and if necessary second, in which said applications were received. Receipt records will be acknowledged in the respective Book, as well as in each application and a copy of said application, which will be signed by the Superintendent of Mines and his Secretary and returned to the interested party.

Article 211: The term of 60 days allowed by the Superintendent of Mines for the legal effects pointed out by article 6 will be granted at the request of the petitioner. The land owner will be personally notified with the decree issued by said Superintendent granting such term.

Article 212: Grantees, in general who need superficial land beyond the perimeter of their concessions will apply for said land to the Sub-Prefect of the jurisdiction and carry on proceedings as provided by the Chapter dealing with expropriation.

Chapter II

Mining Register

Article 213: Dependent of each Superintendence of Mines a Mining Register is hereby established under the direction of the Notary of Mines.

Article 214: Notaries of Mines will be appointed by the National Court of Mines from a list of three candidates proposed by the Superintendent of Mines for a period of 4 renewable years. The candidates must, necessarily, by lawyers with national title.

Article 215: Notaries of Mines will keep sealed and handwritten records of all completed concessions, each of them containing copies of the proceedings, starting with the petition up to the adjudication decree and the minute drawn for the final property title together with the expert's plan. The certificate of the official proceedings with a copy of the expert's plan will constitute the title of the concession.

Article 216: The Notary of Mines will strictly conform his public actions to the Notarial Law and keep the following books.

- a) A Register Book containing all the completed concessions for exploration, exploitation and workings of dumps, slags and tailings.
- b) A Register Book containing Mining Contracts, in which all transfers and changes in mining concessions will be recorded as a result of sales, succession, donations and any other conveying titles; as well as those related to the constitution and dissolution of corporations, leases, loans and other mining transactions.
- c) A Register Book containing reductions or waiver of ownership rights.
- d) A Register Book recording changes from land exploration into exploitation concessions.
- e) A Register Book recording powers of Attorney.
- f) A Register Book containing judicial records of legal instruments drawn up in other Notaries, as well as of acknowledged private documents. This Register shall be kept necessarily, as per order of the Superintendent of Mines.

The Notary of Mines will collect fees in accordance with the established tariff, subject to penalty of dismissal.

Article 217: Before drawing up the basic deed for mining contracts, the Notary will demand payments of patents up to date.

Article 218: It is the Notary's duty to make out summaries of all contracts entered into in his office for the purpose of publication. Copies of said contracts should be sent to the Ministry of Mines and the Public Revenue Office.

TITLE II

EXPLORATION PROCEDURE

Chapter I

Procedure to be followed to obtain licenses for Air-Surveys

Article 219: Applications for licenses to carry out air surveys, as provided by article 31, will be submitted to the Ministry of Mines, which subject to a previous report from the respective technical divisions, will forward them to the Presidency of the Republic in order that a Supreme Resolution be issued authorizing said air surveys.

Chapter II

Procedure to be followed to obtain land exploration concessions

Article 220: Applications for land exploration concessions will be submitted with a copy for the Secretary of the Superintendent of Mines of the jurisdiction. Should the mining claim correspond to the jurisdiction of two or more Superintendences, such claim will be forwarded to any one of them at the applicant's convenience.

Article 221: The acknowledgement of receipt of the application will be written down and recorded in the corresponding Register Book and copy of said application, duly acknowledged, will be delivered to the applicant.

Article 222: The applications will contain the details pointed out in clauses 1), 2), 3), 4), 5), 7) and 8) of Article 231, plus the number of "pertenencias" (holdings) applied for. Furthermore, the following documents should be attached to the application:

- a) A certificate showing that patents were paid as provided by article 38 and a document accrediting payment of the publications.
- b) Original and copy of the plan of the concession with the data called for by article 234.

Article 223: The Superintendent of Mines will reject the applications that are not accompanied by the antecedents pointed out in clauses a) and b) of the preceding article and will order the annulment of the receipt of the application. Should the application be in order, -subject to a report from the Mining Technical Service- the adjudication decree will be drawn up and the publication of the petition and the respective Decree will be published.

Article 224: The publication will be made in the Bulletin of Mines of the respective district for three consecutive times with intervals of seven days.

Should the concession be located within the jurisdiction of two or more superintendences, the publications will be made in the districts of each one of them.

Article 225: From the first publication and until the twentieth day after the third publication, oppositions can be made for the causes determined by article 94, subject to the procedure established by the chapter dealing with oppositions.

Article 226: Once that the term for publications falls due and provided that there is no opposition, the Superintendent of

Mines will order that a commission be entrusted to the Chief of the Technical Service of Mines with authority to subdelegate said commission to one of the assistant engineers with the object of inspecting the land and proceeding to:

- a) verify the existence, bearing and distance of the starting and reference points and
- b) measure the concessions and carry out the land-marking of the concession as pointed out by article 58 and verify the placing of guide-posts in the principal points of the concession.

These proceedings will be carried within the term of forty days. No opposition will be accepted at this stage of the proceedings.

Article 227: After the proceedings and once that the engineer's report has been approved by the Chief of the Technical Mining Service, the latter will return said proceedings to the Superintendent who will draw up the concession decree. A certificate of said decree together with a copy of the expert's plan will serve the interested party as sufficient title. The decree must contain the necessary information and will establish the term of expiration of the concession, which will be computable from the date of the adjudication decree.

Article 228: Land exploration concessions will be granted for the terms established by article 37. The extension terms referred to by article 39 must be requested before the expiration of the original term.

Article 229: The extension terms will be granted through additional adjudication decrees, provided that the requisites established by article 223 are complied with.

With regard to the areas that grantees should wish to retain the authorities shall abide by the provisions of clauses a) and b) of article 39.

Article 230: The reports referred to by article 45 will be submitted to the Ministry of Mines with a memorandum, under

sanction of a fine in case of infraction.

TITLE III

PROCEDURE TO BE FOLLOWED TO OBTAIN CONCESSIONS, THOSE FOR WORKINGS OF DUMPS, SLAGS AND TAILINGS AND FOR TREATMENT AND SMELTING PLANTS

Chapter I

Petition and Adjudication of

Exploitation Concessions

Article 231: The persons or legally organized entities who should wish to obtain exploitation concessions must submit their applications personally or through a proxy clearly supplying the following information:

- 1) General personal data of the applicant requested by law, as shown by his identity card.
- 2) Name to be given to the concession.
- 3) Site where the concession is to be located pointing the canton, province and department.
- 4) Starting point which must, necessarily be located within the perimeter of the concession determining the direction and distance from the fixed and indubitable reference point. Said distance should not be shorter than 500 meters nor larger than 1,000 meters and be visible from both points. The reference point must be in accord with three or more visual points in the direction of typical topographic points of the region, so that it may be replaced in case that it should disappear.
- 5) The number of "pertencencias" (holdings) within the limits allowed by this Code.

6) Kind of predominant mineral and others which, on account of their importance, should be exploited.

7) Names of the grantees and adjacent grantees, if any.

8) Name of the land-owner.

Article 232: The application must be submitted together with a copy and a certificate showing that the respective patents for two semesters, as well as the publications, were paid in advance. The Revenue offices will deliver vouchers accrediting payment of patents, as soon as said payment is effected with only the following data: Name of the petitioner, number of hectares, canton, province and department.

Article 233: The petitioner can submit his application attaching a plan thereto or requesting a term of forty days for that purpose. The adjudication decree will only be drawn up upon presentation of said plan and once that all legal proceedings have been fulfilled.

Article 234: The map drawn up by the Geographical Engineer, duly authorized by the General Superintendence of Mines, will contain the following essential data: Indication of the magnetic or astronomic north; perimeter of the concession marked with black lines; perimeter of the adjacent concessions in dotted lines; fundamental topographic details, such as rivers, hills, cliffs, roads, small villages, ravines, lakes and other topographic features which may clearly characterize the region that is being claimed, as well as the data pointed out by article 231.

It is compulsory that the plan be drawn up, with a copy, in tracing paper and signed by the petitioner and the topographer.

Said copy shall be attached to the legal proceedings and the original shall be filled in the Office of the respective Technical Service of Mines. The plan will be drawn up on a 1:10,000 scale and, for the purpose of petitions covering a very wide area, the respective scale will be applied in accordance with the regulations of the General Superintendence of Mines.

Article 240: Both the grantee and the Revenue Office will be notified of the adjudication decree for the purpose of the respective tax charges.

Chapter II

Measurement, Land-Marking and

Possession Proceedings

Article 241: The applications for measurement, land-marking and possession proceedings should be presented within the term of forty days after the expiration of the term for publication or, in case of opposition, within an equal term after the sentence has been issued.

The measurement, land-marking and possession proceedings should be carried out within the above mentioned term plus the ordinary extension periods granted by the Superintendent at the request of the interested party.

Article 242: Extensions periods are the continuation of the principal term. The Superintendent of Mines may grant an ordinary extension with a maximum duration of forty days.

Article 243: Apart from the ordinary extensions the Superintendent of Mines may, at the request of the interested party, and subject to a favorable report from the Technical Service of Mines, grant an extraordinary extension, not exceeding eighty days. The application should be presented before the expiration of the ordinary concession.

Article 244: The application for measurement, land-marking and possession proceedings must be accompanied by a certificate showing that patents were paid up-to-date. Such application will not be accepted if this requisite is not complied with.

Article 245: The Superintendent of Mines will issue a Decree ordering that the measurement, land-marking and possession proceedings be carried out and instructing the Sub-Inspector of Mines competent authority of the jurisdiction in which the concessions

Petitions for exploitation concessions made in districts in which duly approved census plans were drawn up must necessarily, be for free land, as shown by said census plans. Otherwise, they will be refused subject to a previous report from the Technical Service of Mines.

Article 235: Should the "pertencencias" (holdings) be located in the jurisdiction of two or more Superintendencies, the interested party will be at liberty to submit his application to any of said Superintendencies with jurisdiction. In this case, the publications will be made in all the districts covered by the concession for the sole purpose of solving the oppositions, which should be made before the Superintendence of Mines with jurisdiction.

Article 236: The Superintendence of Mines will ask the Technical Service of Mines for a report on the technical data which should be forwarded to the Chief Engineer within the term of fifteen days under sanction of a fine.

Article 237: Should the Technical report be favorable, the Superintendent of Mines will draw up the adjudication decree based upon the data submitted to him, and will, thereby, order the respective publications and notifications.

Article 238: Should any objections be made on the report, the Superintendent of Mines will order the petitioner to clear up such objections within forty days after the notification under annulment sanction.

Article 239: The publication of the petition and the adjudication decree will be made three consecutive times with intervals of seven days, within the fixed term of forty days, computable from the date in which said documents are delivered by the Secretary to the Editor of the Bulletin. Should the publication be delayed, the above term will be definitely closed for legal purposes after the third publication.

It is the Secretary's duty to make out and deliver the legalized copies to the Editor of the Bulletin and have this fact recorded in the proceedings under his responsibility.

tion is to be located to preside the above mentioned legal proceedings. At the same time, he will order the Chief of the Technical Service of Mines to intervene in the proceedings either personally or through a proxy-engineer.

Article 246: The commissioned authority will designate an actuary and point out the date and hour in which the aforementioned proceedings will be started and order that the respective notifications are made.

Article 247: The appointed actuary, under his responsibility, will notify the land-owner and the adjacent grantees. If any, of the measurement, land-marking and possession proceedings, through the exhibition of the pertinent documents, and the plan, at least, 24 hours before said proceedings are carried out. If said adjacent miners should not have been found the notifications will be made to their managers and failing this, to their employees.

Article 248: If the adjacent miners should not be operating and it should be impossible to make the notification prescribed by the preceding article, an edict shall be published in the Bulletin of Mines or a newspaper of recognized national circulation pointing out the day and hour in which the above mentioned proceedings are to be carried out, mentioning the adjacent grantees and determining the region in which the concession is located. This publication will come out only once, at least, ten days before the proceedings take place and shall thereby, have the value of a personal notification.

Article 249: The interested party shall have the right to appoint another engineer, in his behalf, at the time of being notified of the decree that orders the measurement proceedings. The failure in making use of said right will imply waiver of same. In case of discordance in the appraisements, the authority presiding the proceedings will appoint a third arbitrator.

Article 250: The appointed authority will present himself at the starting point of the concession and after installing the act in the presence of two witnesses he will order the reading of the proceedings and will take the oath as provided by law.

Article 251: The Engineer will start the measurement operations verifying the starting and reference points, lines of sight, distance and bearings as shown by the plan. Should he find them in due proportion, he will continue the measurement operations but, in case that he should verify radical differences, he will abide by the provisions of article 151 and the regulations of the General Superintendence of Mines.

Article 252: The engineer who intervenes in the measurement operations is obliged to draw up a technical plan pointing out the adjudicated "pertencencias" (holdings) and the topography of the land pointing out the starting and reference points and the boundaries with the neighboring properties without omitting any detail or any circumstantial feature.

The aforementioned plan must be drawn up on a 1:10,000 scale and conform with the models and instructions of the General Superintendence of Mines. It will be drawn up on tracing paper with four copies which will be distributed as follows: the original and one copy will be kept by the Technical Service of Mines; a copy will be attached to the original proceedings; another one will be supplied to the Real Estate Office and the fourth copy shall become part of the legal title.

Article 253: The engineer should also fill in the demarcation table and other forms supplied by the Technical Service of Mines and give detailed information concerning the process of the measurement operation pointing out bearings, lines of sight, location of guide posts, land-marks and boundaries.

Whenever concessions should be granted in surveyed districts, it will be required that the astronomic and the magnetic declination be shown in the rough draft.

Article 254: Once that the measurement operations are concluded, land-marking will be effected as provided by article 58. Should the starting and reference points consist of land-marks, these shall have to be one meter and twenty centimeters high with a foundation of one square meter. The guide-posts for the corners of the rectangle must have a foundation of one square meter and be eighty centimeters high.

In the places where it should be impossible to place land-marks or post-guides on account of the snow or other causes due to the formation of the land, boundaries will be shown by offsets or the so called witness monuments.

Article 255: Once that the measurement and land-marking proceedings have been completed, the commissioned authority will go over the boundaries in order to ascertain that the land-marks and guide posts have been placed and will, thereupon, minister possession to the petitioner with the intervention of two witnesses and the Actuary.

Article 256: Within the term of thirty days after the completion of the measurement, land-marking and possession proceedings, the commissioned authority will return said proceedings under sanction of a fine to be determined by the Superintendent of Mines.

Chapter III

Approval of the Proceedings and drawing up of

Property Title for exploitation concession

Article 257: The grantees, within the term of forty days, computable from the day of the possession, will request the approval of the measurements, land-markings and possession proceedings and, thereby, the granting of the property title, under the caducity sanctions established by article 153.

Article 258: Once having ordered that his written instructions be annexed to the principal proceedings and upon receipt of the respective report from the Chief of the Technical Service of Mines, the Superintendent of Mines, will issue a Decree approving the measurement, land-marking and possession proceedings and ordering that the final legal title be drawn up.

Article 259: If the technical report should contain fundamental objections to the possession proceedings, imputable to faults or errors incurred in by the engineer or the commissioned authority such proceedings will have to be repeated and the

expenses resulting therefrom will have to be charged to said engineer and commissioned authority.

Article 260: If the interested party should not have been able to obtain payment of the expenses incurred in as a result of the new possession operation, he will have the right to be supplied with whatever vouchers he may need to obtain reimbursement of such expenses. Payment vouchers will have full compelling force.

Article 261: The term allowed for the new possession proceedings will be the same as that granted for the annulled proceedings.

Article 262: Measurement land-marking and possession proceedings will be annulled for the causes mentioned below, apart from those pointed out in this Code:

- a) When the land-owner or the adjacent grantees expressly mentioned in the petition were not notified to concur to said proceedings or if the notification was not made to them before hand as provided by this Code. However, if regardless of the fact of not having been notified either land-owners or the adjacent miners should appear at the proceedings the omission will be excused.
- b) If the land-marking and possession procedures should have been carried out on a day and hour other than those expressly determined or with the intervention of a non-commissioned authority.

c) In case of an irregular measurement not in accordance with the unity and co-relation of the group of "pertencias" (holdings).

d) When possession has been ministered without previous measurement or inspection of land-marks.

Article 263: Either ex-officio or at the request of the interested party the Superintendent of the Mines has authority to carry out again any of the proceedings mentioned in the preceding article, provided that such repetition is effected

within the term of forty days which may be extended to another equal term.

Article 264: The adjacent miners with property titles who should suffer up damages as a result of the measurement of a new concession may denounce nullity of the proceedings and replacement of the suit to its primitive stage due to the causes pointed out by article 257.

Chapter IV

Proceedings to be followed to obtain concessions for workings of dumps, slags and tailings

Article 265: The petitioner for concessions of dumps, slags and tailings will submit his application to the Superintendent of Mines strictly adhering to the requisites pointed out by clauses 1), 2), 3), 4), 5), 6), 7) and 8) of article 231 specifying that the petition is for dumps, slags, and tailings and mentioning the predominant mineral as well as the approximate calculation of the cubic volume of the residues.

Article 266: The application will be accompanied by the following documents:

- a) Certificate showing payment of patents and publications.
- b) Original and copy of plan attached to the petition.

The failure in presenting the above mentioned documents will cause the refusal of the application.

Article 267: Upon receipt of the application, the Secretary of the Superintendence of Mines will proceed as provided by article 221.

Article 268: The subsequent proceedings of these concessions will conform with the regulations of Chapter II, Title II of this Book in all that should be applicable in each case.

During the measurement and land-marking proceedings, the engineer will determine the cubic volume of the mineral residues applied for and calculate the time it will take to exploit them, taking into account the aforementioned cubic value and the system of work in order to establish the exploitation term in the concession decree.

Article 269: The grantee for dumps, slags and tailings shall have the right to start workings since the date of the adjudication decree. Likewise, the caducity term due to failure in starting workings or abandonment of them, will be computable from the same date.

Article 270: If during the term established by the adjudication decree, the grantee should not have been able to profit by all the mineral residues of his concession, he shall have the right to apply for an extension term. For this purpose, a new technical inspection shall be arranged. Said extension term must be applied for before the principal term falls due and must not exceed the term originally granted. A special decree will be required for the aforementioned extension term.

Chapter V

Procedure for the installation of

Treatment and Smelting Plants

Article 271: The application for the installation of treatment and smelting plants will be presented to the Ministry of Mines and it must contain the following information:

- a) Personal data of the interested party.
- b) Location of the plant stating department, province and canton.
- c) Kind and origin of the mineral to be treated.
- d) Capacity of the plant in metric tons per hour.
- e) Treatment system to be employed.

f) Flow-sheet plan.

- g) Surface of land required for the installation giving the name of the land-owner.
- h) Amount of the investment to be made.
- i) Estimated term to start and finish workings.

Article 272: Once received, the application will be forwarded to the Technical Department for the study and revision of the projects and programs. The interested party shall be given a thirty-days term to clear up any technical observations.

Article 273: Should there be no observations or if these are cleared up, the Ministry of Mines will authorize the installation of the plant, through a ministerial resolution, and will return the copy of the plan together with the official approval.

Article 274: The interested party is obliged to start workings within the term of six months computable from the date of the Ministerial Resolution and to submit reports whenever said interested party should desire to modify the approved plans and projects.

Article 275: Once that the construction of the plant is concluded the grantee will give notice of this fact to the Ministry of Mines in order that said Ministry may authorize the inauguration of the plant, subject to a report from the Inspector who will verify if the installation is adjusted to the necessary technical regulations and offers hygienic conditions and industrial safety.

Article 276: Exploitation grantees and those for dumps, slags and tailings who, with the support of their concessions should desire to install treatment plants without submitting themselves to the regulations of this Chapter, will be permitted to do so, provided that such plants are destined to treat the grantees' own minerals. In this case, the above mentioned plant will be considered as accessory of the Concessions.

Article 277: Within thirty days subsequent to each semester,

the owners of the treatment or smelting plants are obliged to submit to the Ministry of Mines semi-annual report with the following data:

- a) General information regarding the plant concession.
- b) Origin of the minerals to be treated; their weight and grades.
- c) Weight, grade and content of the minerals treated.
- d) Products and sub-products obtained and their employment.

Article 278: The owners of treatment and smelting plants will be permitted to move their installations within the national territory, subject to previous notice to the Ministry of Mines.

Article 279: Apart from complying with the requisites established by the mercantile and special laws of the country, the owners of treatment and smelting plants are obliged to keep the following books:

- a) A Register Book of all in-coming minerals stating the origin, weight, grades, impurities and humidity of each lot; quantities and proportion of the recuperated metal, as well as the losses from slags and tailings.
- b) A Register Book showing the order in which the treatment and smelting operations are carried out.
- c) A Register Book of contracts entered into with mining enterprises.

TITLE IV

PERFORMANCE OF RIGHTS AND OBLIGATIONS OF THE GRANTEEES

Chapter I

Rights upon Waters

Article 280: The administrative authority with jurisdiction to try lawsuits and claims is the Sub-Prefect of the Province with appeal before the Superintendence of Mines but with no ulterior recourse.

Article 281: Expropriation of public dominion waters will be carried through in accordance with Chapter II, Title V of this Book.

Article 282: Whenever land exploration grantees and those for dumps, slags and tailings, as well as the owners of treatment and smelting plants, should need to use public domain waters, they will request them from the Superintendent of Mines, through the same procedure followed for exploitation concessions supplying the same information pointed out by article 221 in whatever should be applicable. Furthermore, they will point out the approximate volume of water required and will attach to their applications copies of the adjudication decree, as well as their property titles or contracts related to the mining concession or the treatment or smelting plants.

Article 283: Water grantees through direct petition will not pay patents but for the purpose of oppositions, said publications will be required.

Chapter II

Proceedings for Administrative Protection

Article 284: Land exploration and exploitation grantees and those for dumps, slags and tailings who should need administrative protection will apply for it in writing from the Sub-Prefect of the Province who, after notifying the defend

ant, in writing, will appear at the site of action with public force, if necessary and once having verified the facts, will grant said protection.

Article 285: Should the administrative protection be requested against a neighboring grantee, the Sub-Prefect will order the interested parties to appear at the site accompanied by their experts and, if necessary, will request the assistance of the Technical Service to solve the case.

Article 286: The protection granted by the Sub-Prefect will be provisional and his decision will be appealable before the Superintendent of Mines.

Chapter III

Opposition Proceedings

Article 287: Oppositions to mining concessions will be interposed before the Superintendent of Mines within the term of the publications until the twentieth day after the last publication. If, within the above mentioned term no opposition should have been made, said opposition can be effected at the time of carrying out the measurement, land-marking and possessor proceedings in accordance with the regulations of the Chapter.

Article 288: In case that the exploration grantees should not have alleged opposition through the administrative channel and if the proceedings for the new concessions should have been completed, the defendants may resort to the ordinary procedure. For this purpose, there will be a term of six months, computable from the day of the possession.

Article 289: The opposition alleged during the period of the publications will be interposed attaching a certificate of the adjudication decree or a copy of the Bulletin of Mines, whenever the concession that is being claimed is under proceedings or if the property title is completed. Likewise, a copy of the plan or the experts rough-draft, whichever may be more convenient, as well as a certificate accrediting payment of patents up-to-date must also be accompanied.

Article 295: Once that the letters requisitorial and the experts' plans are returned and ten days after the Fiscal has made his pronouncement, the Superintendent of Mines will draw up his resolution either approving or disapproving the opposition. This resolution will be appealable to the National Court of Mines within the term of three days. Thence either with or without the concurrence of the parties, said National Court of Mines, subject to the report of the Superior Fiscal of Mines should make its pronouncement within the term of thirty days computable from the date in which the proceedings were submitted to said Court.

Article 296: If opposition should be alleged while the measurement, land-marking and possession proceedings are being carried out, the commissioned authority will order the Fiscal Engineer to make a provisional measurement determining the location of the new petition and the intersections and superpositions on the property considered to be affected, provided that a plan is attached to said petition together with a certificate showing payment of patents to date. The commissioned authority will also order that a detailed plan of the controverted region to draw up and that said plan be annexed to the law-suit in order that the Superintendent of Mines may consider it before drawing up his resolution.

Article 297: The opposition may be alleged verbally or in writing either by the grantee or the manager while the possession proceedings are being carried out.

Article 298: If the concession intended to be measured consist of more "pertenencias" (holdings) than that based on the opposition or if the engineer's report and plan should indicate that the superposition is only partial, the commissioned authority will minister possession of the non-controverted area provided that said area keeps the starting points without affecting the opposer's rights in order that he may assert said rights before the Superintendent of Mines.

Article 299: Once that the orders requisitorial, together with the report the experts' plan and a detailed record of the proceedings referred to by the preceding articles are returned the Superintendent of Mines will order that the parties be notified

Article 290: The failure in presenting the documents, rough-draft or plan and the certificate showing payment of patents referred to in the preceding article will cause the refusal of the opposition. Therefore, the proceedings will be carried on regardless of said opposition.

Article 291: If opposition is alleged within the term of the publications the Superintendent of Mines will demand an answer from the interested parties within the term of three days and upon expiration of said term he will order that an expert's inspection be carried out under the direction of the Chief of the Technical Service of Mines who, either personally or through sub-delegation to one of his assistant engineers or technicians will verify, on the ground, the location of the conceding concessions and find out other necessary technical details.

Article 292: By his decree ordering the expert's inspection, the Superintendent of Mines will grant the term of forty days for the fulfillment of proceedings mentioned in the preceding article, as well as for the restitutions of the letters requisitorial. Due to exceptional circumstances and at the request of the interested parties and subject to a favorable report from the Chief of the Technical Services of Mines, the Superintendent of Mines will grant only one extraordinary term of forty days for the above mentioned proceedings.

Article 293: Within three days after being notified with the decree ordering the experts' inspection, the interested parties may appoint their respective experts who, after being sworn in, will intervene in the proceedings. The Technical Chief or the Fiscal Engineer will act as arbitrators.

The failure of the interested parties in appointing their own experts will be considered to implicate that they are in accordance with the appointment of the expert made by the Technical Service of Mines.

Article 294: The payment of fees due to the Fiscal Engineer or arbitrator will be made by the contending parties in equal parts. Such payment will be made in the Office of the Technical Service of Mines before the experts' proceedings are carried out.

authority or commissioned engineer, once having verified the built or cultivated area and without interrupting the land marking or possession proceedings will limit themselves to record the facts in the Act as well as in the respective technical report.

In his Decree approving the possession proceedings, the Superintendent of Mines will declare whether or not the superficial rights should be legally acknowledged. Said decree will be appealable within a term of three days only for the devolutive effects before the National Court of Mines which will solve the case with no ulterior recourse.

Chapter IV

Obligations of the Grantee

Article 303: So far as the exploitation grantees and those for workings of dumps, slags and tailings are concerned the interruption of works referred to by article 98 and the interruption of work pointed out by article 99 will be verified indistinctly:

- a) During the production period with the liquidations from the legally authorized buyers or copies of the export policies.
- b) If they should be in the production period, through a report from the Technical Service of Mines accrediting that preparation and other works required for exploitation were carried out.
- c) So far as the exploration grantees are concerned through a report issued by the Technical Service of Mines.

Article 304: The applications for extension term referred to by article 100 will be forwarded to the Secretary's Office of the Superintendence of Mine with two copies, one of which will be returned to the interested party fully acknowledged. The above mentioned application will be presented before the term to be extended falls due and must be accompanied by the documents that justify said extension. If the circumstances should

In order that, within the term of three days, they may state their agreement or observations to said proceedings.

If the parties should not be in accordance with the fiscal experts' report they shall have the right to appoint their respective appraisers. In this case, the Superintendent of Mines will set a term not exceeding forty days in order that said appraisers may issue their reports. If, notwithstanding such reports, the discordance should continue. The Chief of the Technical Service shall be called upon to act as arbitrator.

If the parties should keep silent or if they should express their agreement with the commissioned engineer's final decision, the Superintendent of Mines, within the following ten days and upon receipt of the Attorneys report, will draw up his resolution declaring that the opposition alleged on the ground has been proven or approving the possession proceedings.

Article 300: The opposition that should have been rejected during the period of publications cannot be alleged once more for the same causes when the measurement, land-marking and possession proceedings are being carried out.

Article 301: Grantees for workings of dumps, slags and tailings can only allege opposition against concessions of the same nature. Exploration or exploitation grantees can allege opposition against concessions for workings of dumps, slags and tailings in the manner and in accordance with the conditions established by this Code.

Article 302: The superficially who owns buildings, constructions or farming plots, either fenced or walled, located within the area of mining exploitation concessions or workings at dumps, slags and tailings, shall have the right to appear at the time when the measurement, land-marking and possession proceedings are being carried out for the sole purpose of obtaining a declaration from the mining grantee to the effect that said mining grantee will respect his ownership rights. If the miner should deny the rights of the superficially or refuse to make a declaration acknowledging such rights, the

whether or nor the servitude should be established.

Article 311: The agreement of the parties or the decision of the Sub-Prefect should be homologated or approved by the Superintendent of Mines.

Article 312: I, once that the servitude is established a controversy should arise and said controversy should be confined to the sum of the indemnification to be paid by the grantee, if will be up to the Sub-Prefect to establish within the term of twenty days the amount of such indemnification.

Chapter II

Expropriation Procedure

Article 313: The grantee who should not have been able to come to an agreement with the superficially or neighboring miner with regard to the use, utility, extension and price of the land under contention, will appeal to the Sub-Prefect and expose the matter to him stressing the need of resorting to expropriation to settle the case.

Article 314: The Sub-Prefect will appoint the day and hour for an ocular inspection. If the parties should not agree in adhering to the decision of an arbitrator, each of them will concur with his own engineer and it will up to the commissioned authority to appoint the technician who will act as arbitrator.

Article 315: At the appointed hour and in the presence of the authority, the parties and the engineers or experts will proceed to the inspection once that the latter have been sworn in. In view of the pronouncement of said engineers or experts, the Sub-Prefect will approve the expropriation or reject it.

Article 316: In case that the authority should approve the expropriation the engineers or experts will proceed to appraise the land and they shall submit their report to the Sub-Prefect subject to a hearing from the interested parties.

require it, a technical inspection can be ordered.

Article 305: No caducity denouncement will proceed against the petitioner of a concession who should have applied for an extension in the manner and within the terms established by the preceding article until the extension has been definitely determined.

Article 306: If the extension should be granted it will only be valid for the periods established by articles 98 and 99. Grantees may obtain successive extensions for an indefinite time, provided that said extensions are fully justified.

Article 307: If the extension application should be denied by the Superintendent of Mines, the interested party shall have the right to appeal to the National Court of Mines within three days after the notification with no ulterior recourse.

Article 308: In case that the extension should be applied for when the term has fallen due, the Superintendent of Mines can, subject to a report from his Secretary, mend this irregularity provided there is no caducity denouncement.

Article 309: Granted extensions will be considered as prolongations of the principal term with the exceptions of the provisions of the preceding article.

TITLE V

RELATIONS OF THE GRANTEE

Chapter I

Proceedings for Servitudes

Article 310: Whenever a mining grantee should desire to establish a servitude and should not have been able to come to an agreement with the land-owner or an adjacent miner, he will report to the Sub-Prefect of the jurisdiction who following the procedure established by the Chapter dealing with expropriation, in whatever should be applicable, will decide

Article 317: The parties may appeal to the Superintendent within three days after being notified. Should the appeal be against the sentence ordering expropriation, said appeal will be granted only after the appraisal is approved.

Article 318: The Superintendent will substantiate the appeal ordering notification, which will have to be replied within six days after the certification. The resolution will be drawn up within eight days with no further recourse.

Article 319: Once that the expropriation sentence and the appraisal are effected the claimant grantee will pay the expropriated party, the sum of the indemnification. Should there be joint-owners minors or mortgage creditors or should there be law-suits on the property rights, payment of said indemnification will be made through legal deposit.

Article 320: With the certificate of payment of the indemnification the claimant will demand possession of the expropriated land which will, immediately be ministered by the Sub-Prefect or commissioned to the nearest competent authority.

TITLE VI

PROCEEDINGS CONCERNING THE EXTINCTION OF CONCESSIONS

Chapter I

Waiver or Reduction Proceedings

Article 321: Grantees, in general, can totally renounce or partially reduce their concessions at any time. The decree approving said renouncement or reduction must be accompanied by a certificate showing payment of the publications made in the Bulletin of Mines.

Article 322: Before accepting the aforementioned waiver or reduction the Superintendent of Mines will order the Notary to inform whether there are or not creditors, partners or lessees of the concession. Should there be any he will order

that they be notified in order that, within a term of fifteen days, they may legally claim their rights. Should the Superintendent find that such claim is justified, he will deny the aforementioned waivers or reductions.

Article 323: Whenever an application should be for reduction, the Superintendent of Mines will order that the Chief of the Technical Service proceed to a new measurement placing new guide-posts in the area which is to be retained and forwarding the corresponding plan or report. This operation will be carried out subject to a previous legal notice to the adjacent miners.

Article 324: Upon receipt of the report from the Chief of Technical Service of Mines, together with the original plan and three copies therefrom, the Superintendent will approve the reduction.

Chapter II

Caducity Proceedings

Article 325: Caducity denouncements will be forwarded to the Secretary of the Superintendent of Mines who will acknowledge receipt of them. Copies of said denouncements signed by the Superintendent and his Secretary will be returned to the denouncers. The priority of the denouncements will be established by the Secretary's receipt records.

Article 326: In the cases pointed out by articles 148, 149, 150 and 153 the Superintendent of Mines will request from the Secretary information regarding the alleged reasons for denouncement. Should said reasons be justified and in view of the Attorney's pronouncement, said Superintendent of Mines will draw up a Decree declaring caducity and acknowledging the rights of whoever may claim priority in the denouncement. Should the alleged reason for caducity be unjustified the denouncement will be denied.

Article 327: The decree drawn up by the Superintendent of Mines can be appealable by the parties within the term of three days after the notification. In this case, the Superin-

filed in the same manner.

tendent will grant the appeal in suspensive effect.

Article 328: The National Court of Mines, subject to the pronouncement of the Attorney of Mines will draw up a decree, which will be appealable to the Supreme Court of Justice for nullity within the term of eight days with no ulterior recourse.

Article 329: Once that the caducity decree is drawn up, the Superintendent of Mines will order that the denouncer be summoned to pay over-due patents and publications within a definite and only term of five days from notice, under sanction of caducity ipso-facto.

Article 330: Whenever caducity should be denounced due to non-payment of patents for two or more over-due semesters, the Superintendent of Mines will request from the Notary of Mines a report stating who is the actual grantee of the concession and the sum he owes for taxes. He will subsequently request information from the Revenue Office concerning his outstanding debts.

Article 331: Upon receipts of the above mentioned information and if the delay in payment of patents should be rendered evident, the Superintendent will draw up a Decree ordering the debtor to pay, within fifteen days from notice, the over-due sums, plus the penalty and costs of the procedure, under warning of caducity.

Article 332: The debtor will be personally notified of the aforementioned decree. Likewise, notice will be sent to the creditors referred to in the Notary's report, so that they may exercise their right of paying patents.

Article 333: If, through the Notary's certificate it should be evidenced that the debtor is absent from the district or that he maliciously avoids notification, he will be summoned to comply his obligations through edicts published in the Bulletin of Mines, for three consecutive times, under the title "Caducity for non-payment of Patents".

Starting with the third publication, a term of fifteen days will be allowed for payment. Absent creditors will be noti-

Article 334: Upon expiration of the fifteen-day term, and in case that the total charge should not have been paid, the Superintendent of Mines, subject to a previous report from the Revenue Office, will declare the caducity of the denounced concession. The assertive Decree determines the legal status. The denouncer is not obliged to pay over-due patents.

Article 335: With the intervention of the Superintendent of Mines, the new grantee will pay the value of the installations and constructions established by the experts' appraisement from which he will deduct the sum paid for the patents and interest due to the State and the balance, if any, will be reimbursed to the denounced grantee.

Article 336: Caducity denouncements against land exploration concessions proceed for the causes pointed out by article 160. The proceedings thereof will be the same as those established for exploitation and workings of dumps, slags and tailings. The denouncer with acknowledged priority will declare whether the concession will remain for land exploration or if will become an exploitation concession.

Article 337: In the cases pointed out by article 155 and 156 relative to abandoned mining works or failure in starting them, preference will be given to the enforcement of the regulations established by Chapter IV, Title IV of Book II and subsidiarily, to the ordinary ipso-jure caducity regulations. For this purpose, the grantee must be notified with the denouncement.

Article 338: The sentence declaring nullity referred to by 161 will be appealable to the National Court of Mines, within three days after its notification with no ulterior recourse.

TITLE VII

MINING JURISDICTION AND TECHNICAL AND ADVISORY ENTITIES

Chapter I

General Regulations

Article 339: The trial and resolution of mining law-suits, so far as granting, maintenance and extinction of concessions are concerned, as well as the accessory rights inherent to the development of mining activities are under the mining jurisdiction which define rights and regulates their use and exercise.

Article 340: The mining jurisdiction is exercised by the National Court of Mines, the Superintendence of Mines and the Sub-Projects of Provinces. These authorities will be assisted by the Attorney General of Mines, the District attorneys and the Technical Services of Mines dependent from the Ministry of Mines.

Article 341: The National Council of Mines is an advisory entity that co-operates with the Executive Power in directing the mining policy of the country.

Chapter II

The National Court of Mines

Article 342: The National Court of Mines with domicile in the city of La Paz is constituted by three members with the status and, thereby, the qualifications of the Magistrates of the Superior Courts of Justice of the country. They will be elected by the President of the Republic out of a list of three candidates suggested by the Senate. Their functions will last during a period of four years. They can only be removed in one instance: that of the National Supreme Court of Justice.

Article 343: The members of the National Court of Mines will elect among themselves a President who will act in that capacity during four year. If, due to some impediment, the President should resign, he will be replaced by the Dean or oldest member of the Court.

Article 344: Two votes, including that of the President, will be required to come to an agreement in the matters submitted to the Court.

Article 345: The National Court of Mines will appoint every year, six co-judges amongst lawyers duly qualified to act as members of the Superior Court of Justice.

Article 346: The members of the National Court of Mines are refusable before the Superior Court of Justice of La Paz. Accusations should, thereby, be carried out according to the Civil Procedure.

Article 347: The National Court of Mines has the following duties:

- a) To try in the appealing and compulsive stages the resolutions pronounced by the Superintendent of Mines. Its resolutions are susceptible of extraordinary nullity recourse before the Supreme Court of Justice.
- b) To settle at one only instance the competence differences that may arise among Superintendents of Mines or between them and the Sub-Prefects or other administrative authorities.
- c) To appoint co-Judges in the same Court.
- d) To appoint a Secretary who must be a lawyer, or a substitute in case that said Secretary should be absent or unable to exercise his functions, due to some impediment
- e) To supervise the work of the Superintendents of Mines and apply disciplinary measures.
- f) To project the Annual Budget of the Court.

g) To look after the proper application of this Code and other regulations related to mining.

Article 349: The President of the National Court of Mines shall have the following duties:

- a) To represent the Court in all official acts.
- b) To distribute the law-suits by ballot.
- c) To appoint the officers and employees of the Court.
- d) To adopt the Court's internal administrative and disciplinary measures.
- e) To authorize the opening of the National Register of Mines.
- f) To authorize the Courts budgets.

Article 350: All the resolutions and decrees adopted by the National Court of Mines shall be recorded in a Register Books.

Article 351: The Secretary of the Chamber will have the following attributes and obligations:

- a) To authorize and register the resolutions, decrees and orders issued by the Court.
- b) To draw up the minutes of the meetings held by the Court.
- c) To substantiate the proceedings and give, for this purpose, the necessary instructions to the personnel.
- d) To fulfill the administrative work required to make the Court's decisions efficient.

Article 352: The Chief Attorney of Mines will represent the Public Ministry before the National Court of Mines and shall be appointed by the President of the Republic out of a list of three candidates submitted by Minister of Mines.

Article 353: The Chief Attorney of Mines will pass judgement

on the cases foreseen by this Code and it will be his duty to denounce *ex officio* all the irregularities, omissions and deficiencies in mining proceedings. His official functions will last four years.

Article 354: The National Register of Mines will be published under the direction of a special officer.

Chapter III

The Superintendents of Mines

Article 355: There will be a Superintendent of Mines in each capital of Department with the category of District Judge and with jurisdiction in his respective territory. He will be appointed Superintendent of Mines out of a list of three candidates submitted by the National Court of Mines. His mandate will last four years and it will be up to him to pass judgment on mining law-suits whatever may be the value or importance of the mining interests involved in such claims.

Article 356: In the capitals of Department in which there are not Superintendents or in which the lack of said Superintendents should be due to absence or recusatation according to law, the Prefects of Departments will take over their functions. In Tupiza or other mining districts to be created, the Judge of the jurisdiction will perform the duties of the Superintendents of Mines.

Article 357: The Superintendents of Mines will have the following attributes:

- a) To grant land exploration or exploitation concessions as well as those for workings or dumps, slags and tailings.
- b) To declare caducity due to the causes pointed out by this Code granting priority rights if justified.
- c) To pass judgment on concessions alleged to have become null.
- d) To pass judgment on partial or total waivers made by

grantees.

e) To analyze or clear up oppositions.

f) To pass judgment on all other cases pointed out by this Code in their principal or secondary aspects and the decisions considered to be necessary.

Article 358: The Superintendents of Mines will pass judgment on the appeals and attested instruments against the Sub-Prefects' decisions dealing with transgressions, servitudes, expropriation and other proceedings entrusted to them.

Article 359: Each Superintendence of Mines shall have a Secretary, an Assistant and other subordinate employees.

Chapter IV

Sub-Prefects

Article 360: As primary court administrative authorities, Sub-Prefects act whenever protection is requested or in law-suits involving spoliation, trespassing, servitudes or expropriation referred to in this Code.

Article 361: The resolutions drawn up by the Sub-Prefects are appealable before or can be revised by the Superintendent of Mines in the instances pointed out in this Code. Appeals will be interposed within one and only term of three days.

Chapter V

Secretaries of the Superintendencies

of Mines

Article 362: The National Court of Mines will appoint a Secretary for the Superintendence of Mines out of a list of three candidates submitted by the Superintendent.

Article 363: The Secretary will authorize all the resolutions, sentences and decrees issued by the Superintendence of Mines

with the words "ante mi" (before me). He will forward all requested information and, under his responsibility, will carry on all the Superintendence's proceedings. In case of absence, he will be replaced by the Districts Notary of Mines.

Article 364: Principally, the Secretary will keep the following books:

a) One containing land exploration and exploitation concessions and those for workings of dumps, slags and tailings, as well as those related to the transformation of exploration into exploitation concessions.

b) One containing caducity and nullity denouncements and waiver or reduction of concessions.

c) One registering resolutions and

d) A daily record of proceedings.

Article 365: The Secretary shall be held responsible for the files and the safety of the Superintendence's files and written records.

Article 366: Apart from the Secretary, there will be an assistant and an Actuary of proceedings, both of them appointed by the Superintendent of Mines.

Chapter VI

Technical Organizations

Article 367: The technical activities will be carried on by the Ministry of Mines through its Technical Departments and, particularly by the General Direction of Mines and its Technical Service.

Article 368: The General Direction of Mines will act under the direction and supervision of the Ministry of Mines and its functions, apart from those established by this Code, will be determined by the pertinent regulations and By-laws now in force.

Article 369: The General Direction of Mines is constituted by an Engineer, as Director, Chief Engineers in charge of the Technical Services, Inspector Engineers, Assistant Engineers, Cartographers, Topographers and other assistant officers.

Article 370: The headquarters of the Direction of Mines are in the city of La Paz.

Article 371: The Director General of Mines has legal power:

- a) To inform the Minister regarding mining matters.
- b) To study and submit to the consideration of the Ministry regulations and measures, in accordance with the laws, now in force, which he may deem convenient.
- c) To manage and supervise the technical services.
- d) To make up and publish the General Mining Census of the republic.
- e) To keep in his archives all the records and information related to the mining industry of the country.
- f) To control and direct the commissions in charge of drawing up the mining census throughout the country.

Article 372: The Technical Services will act under the supervision of the General Direction of Mines and will be in charge of a Chief Engineer. Each of the remaining engineers shall act independently from the others maintaining relations among themselves only when the mining concessions of two or more Departments are affected.

Article 373: The Chief Engineer of the Technical Service is conferred with authority to:

- a) To inform the Superintendent of Mines, upon request of the same, about the adjudication of mining concessions.
- b) To supervise and establish the procedure of mining services.

c) To take care and be responsible of the drawing up and maintenance of cadastral and experts' plans and the pertinent reports.

d) To supervise the personnel under his authority.

Article 374: The Technical Services will operate in all the cities in which Superintendencies of Mines are established.

Chapter VII

The National Council of Mines

Article 375: The National Council of Mines is a specialized permanent advisory entity, dependent from the Executive Power, which exercises its functions together with the Ministry of Mines and constituted as follows:

Its ex officio President namely, the Minister of Mines.

A representative of the Ministry of Mines who will act as Vice-President.

A representative of the Ministry of Foreign Relations.

A representative of the Planning and Coordination Secretary's office.

A representative of the National Chamber of Mines.

A representative of the National Association of Middle-size Miners.

A representative of the Mining Corporation of Bolivia.

A representative of Banco Minero de Bolivia.

A representative of the Mining Cooperative organizations.

A representative of the Syndical Federation of Mining Workers.

Article 376: The duties and attributes of the National Council of Mines are:

- a) To advise the Government in making up its specialized development plan in all its phases.
- b) To assist the Government in the marketing and exporting operations of mining products.
- c) To co-operate with the Government in the financing operations of the mining industry in general.
- d) To report in matters related to the establishment and lifting of fiscal reserves.
- e) To promote the organization of institutes for the study and investigation of mining problems.
- f) To intervene in all the mining cases specified in this Code.

Article 377: The National Council of Mines will engage a permanent technical and administrative personnel directed by a General Secretary.

Article 378: The Departments of Mining Economical and Statistical Studies of the State now dependent from autonomous mining entities will, hereafter, function under the direction of the National Council of Mines.

TITLE VIII

SPECIAL AND TRANSITORY REGULATIONS

Article 379: The summons and notifications by edicts, ordered by the Superintendent of Mines, will be published in the Bulletin of Mines or in any of the newspapers known to have the largest circulation in La Paz or in newspapers published regularly in other districts of the republic.

Article 380: Should the terms for the mining proceedings be exhausted and if the interested party should urge to go

with them, the Superintendent may mend the delay, provided that there is no denouncement from a third party. Ipsa facto caducity cases are exempted from this ruling.

Article 381: Exploitation concession applications with approved catastral plans must be made on free land marked down in the district's general plan. Petitions not in accordance with this regulation will be refused subject to a previous report from the Technical Service of Mines.

Chapter II

Transitory Regulations

Article 382: The concessions that, at the date of the promulgation of the Code, were under procedure will be completed in accordance with the regulations of this Code.

Article 383: A special law will determine the legal status of the concessions for adits in the Potosí Hill with due respect of established rights.

Article 384: Fourth category substances referred to by article 12 of the 1925 Code of Mines, not included in the Second Part of article 6 of this Code, can be applied for up to six months after the promulgation of this Code by whoever should be exploiting them at the present time. Upon expiration of said term they may be applied for by whoever should be interested in them.

Article 386: With due respect of the rights acquired by third parties under the provisions of the Law enacted on October 31, 1957 and its by-laws in force since April 21, 1961, both of these regulations are hereby withdrawn, except in so far as the compulsory character of the new inscription. The grantees who should not have complied with such inscription will be liable to payment of a fine to be determined by the Ministry of Mines.

Article 387: The present Code will be in force sixty days after its promulgation.

Article 388: All regulations contrary to this Code are hereby derogated.

Province of British Columbia
Canada

1974

PROSPECTORS' ASSISTANCE
(Replacing chapter 302, R.S.B.C. 1960.)

CHAP. 68

[To be proclaimed before in effect.]

Prospectors' Assistance Act

Interpre-
tation.

1. In this Act, unless the context otherwise requires,

"director" means the Director of Prospectors' Assistance appointed under section 2;

"minister" means that member of the Executive Council charged by Order of the Lieutenant-Governor in Council with the administration of this Act, and includes a person designated in writing by the minister;

"prospector" means a person other than a corporation, as defined in the *Companies Act*, who holds a valid and subsisting free miner's certificate under the *Mineral Act*, and is actively engaged in prospecting for minerals;

"regulations" means the regulations made by the Lieutenant-Governor in Council under this Act. 1974, c. 68, s. 1.

Director
appointed.

2. (1) The minister shall, pursuant to the *Public Service Act*, appoint a Director of Prospectors Assistance, who shall, under the direction of the minister, administer this Act.

(2) The minister may, subject to the *Public Service Act*, appoint such other officers and employees as may be required to carry out the purposes of this Act. 1974, c. 68, s. 2.

Application
for grant.

3. (1) A prospector may apply to the director in the form and manner prescribed by the minister for a grant of prospectors assistance under this Act.

(2) Under the direction of the minister, the director may, if he is of the opinion that the prospector

(a) qualifies under this Act, or the regulations; and

(b) has adequate experience, training, and understanding of prospecting,

grant to the prospector financial assistance in an amount and subject to such terms and conditions as may be fixed and determined by the director in accordance with the regulations. 1974, c. 68, s. 3.

Maximum
grant.

4. (1) The director shall not grant assistance in an amount greater, in the aggregate, than four thousand dollars to any one prospector in any one year, unless otherwise authorized in writing by the minister.

(2) Notwithstanding the provisions of subsection (1), the Lieutenant-Governor in Council may authorize the minister to grant additional funds for the purpose of exploring and developing a mineral property. 1974, c. 68, s. 4.

3748-1

Purpose of grant.

5. (1) The grant of assistance under this Act shall be used for the purpose of prospecting and exploring for minerals in the Province or for travelling and training for those purposes under the terms and conditions determined by the director in accordance with the regulations.

(2) The director may require a prospector to provide an undertaking, in such form and manner as the minister may prescribe, that no part of the grant of assistance under this Act will be used for a purpose other than that prescribed in this Act, the regulations, or the terms and conditions determined by the director.

(3) Every person who

(a) refuses or neglects to carry out an undertaking given to the director under subsection (2); or

(b) obtains or uses a grant of assistance given under this Act for a purpose other than that for which it was given

is guilty of an offence. 1974, c. 68, s. 5.

Terms of grant.

6. It shall be a term and condition of a grant of assistance under this Act that the Crown in right of the Province, represented by the minister,

(a) has the right to examine and evaluate any mineral property prospected or explored by the prospector during the year in which a grant is paid to him;

~~(b) has the first right to purchase, lease, or take an option on, any mineral property referred to in clause (a); and~~

~~(c) has the first right to negotiate an agreement with the prospector whereby the Crown, or an agency designated by the Crown, agrees to develop or bring the mineral properties referred to in clause (a) into production. 1974, c. 68, s. 6.~~

Repealed
See Bill
No. 21 1976
June 3, 1976

Prospectors' courses.

7. (1) The Lieutenant-Governor in Council may, upon the recommendation of the minister, establish, equip, maintain, and operate at suitable locations throughout the Province prospectors' training courses at which prospectors may gain knowledge and training in prospecting and mineral exploration techniques, and obtain such qualifications as may entitle them to assistance under this Act.

(2) The minister may authorize the director, in the proper case, to give a grant under this Act to a prospector for the purpose of attending a training course on the subject of prospecting. 1974, c. 68, s. 7.

Regulations.

8. (1) For the purpose of carrying out the provisions of this Act according to their intent, the Lieutenant Governor in Council may make such regulations and Orders as are ancillary thereto and not inconsistent therewith; and every regulation shall be deemed to be part of this Act and has the force of law.

(2) Notwithstanding subsection (1), the minister may make such regulations as he is authorized to make under this Act. 1974, c. 68, s. 8.

Appropriation.

9. The Minister of Finance shall pay, on the requisition of the minister, out of the Consolidated Revenue Fund, or out of the Revenue Surplus Appropriation Account of the Consolidated Revenue Fund, or partly out of the Consolidated Revenue Fund and partly out of the Revenue Surplus Appropriation Account of the Consolidated Revenue Fund, sums required for the purposes of this Act out of moneys authorized under the *Prospectors' Grub-stake Act* up to the thirty-first day of March, 1975, and thereafter out of moneys authorized by an Act of the Legislature to be paid and applied for such purposes. 1974, c. 68, s. 9.

Repeal.

10. The *Prospectors' Grub-stake Act* is repealed. 1974, c. 68, s. 10.

Commencement.

11. (1) This Act, excepting this section and the title, comes into force on a date to be fixed by the Lieutenant-Governor by his Proclamation, and he may fix different dates for the coming into force of the several provisions.

(2) This section and the title come into force on Royal Assent. 1974, c. 68, s. 11.

Certified correct as passed Third Reading on the 3rd day of June,
1976. E. GEORGE MacMINN, *Law Clerk.*

HON. MINISTER OF MINES AND
PETROLEUM RESOURCES.

BILL

No. 21]

[1976

Prospectors Assistance Amendment Act, 1976

HER MAJESTY, by and with the advice and consent of the Legislative
Assembly of the Province of British Columbia, enacts as follows:

S.B.C.
1974
c. 68
s. 6.

1. Section 6 (b) and (c) of the *Prospectors Assistance Act* is repealed.
2. This Act comes into force on a day to be fixed by Proclamation.

Printed by K. M. MACDONALD, Printer to the Queen's Most Excellent Majesty
in right of the Province of British Columbia.

1976



**compendio
cost-sharing
information**

INTRODUCTION TO THE NEW NORTHERN ROADS POLICY

Next to human effort and skill, transportation is often referred to as the key to development for any area. Therefore, and in line with its responsibilities to Canada's north, the Department of Indian Affairs and Northern Development has embarked on a lengthy "Northern Roads Network Program" designed to facilitate resource development and communications in the Yukon and Northwest Territories.

All resource roads built under the program come under one of the following classifications: **Trail Trails; Initial Access Roads; Permanent Access Roads; Resource Development Roads; and Area Development Roads.** Of these roads, the Resource and Area Development Roads are financed completely by the federal government.

In the cost-sharing category and described in this folder are: **Trail Trails, Initial Access Roads; and Permanent Access Roads.** Cost-sharing agreements are not restricted to industry involved in the development and extraction of resources, such as hard-rock minerals, petroleum and natural gas. Sawmills, tourist lodges, canneries, or any industry which will add to the growth and development of the territories may be eligible for federal roadbuilding assistance.

Trail Trails

are.....
low standard roads designed to provide access to a resource project which is in the exploration or development stages. Winter roads are included in this category.

Minimum Desirable Road Standards
Trail Trails may be constructed to whatever standard that will provide suitable access to the property.

Trail contributions are financed and administered by the applicable territorial government. Amounts may be up to 50% of the cost of construction but shall not exceed \$20,000.

Location
The location of the Trail must be approved by the appropriate Territorial Commissioner.

HOW TO APPLY
Application forms for Trail assistance are available from:
Commissioner of the Northwest Territories, Yellowknife, N.W.T. or Commissioner of the Yukon, Whitehorse, Yukon Territory

Initial Access Roads

are.....
low standard roads designed to provide access to a resource project which is in the exploration or development stage. This category, however, is intended for cases where, because of length, terrain or difficulty of construction, total cost is such that the maximum permissible contribution under the trail road category would be insufficient.

MINIMUM DESIRABLE ROAD STANDARDS

Desirable Design Speed	Bank of Right of Way	Width of Travelled Surface (feet)	Width of Shoulders (feet)	Bridge Design Length	Width of Maximum Gradient	Minimum Curve
25 mph.	50'	12' min. with turnouts	nil	H20-S16	12' & 14'	35°

*Desirable design speed is not related to minimum standards shown. Particular sections of road may be built to lesser standards where difficult terrain makes strict adherence to stated standards excessively costly.

COST-SHARING TERMS

The amount of federal assistance will not exceed 50% of actual road cost, or 5% of the Company's expenditure on exploration or development of the project. The maximum yearly contribution is limited to \$100,000 if the project is exploratory in nature and \$500,000 if the project is primarily development.

Location
The location of the Initial Access Road must be approved by the Minister of Indian Affairs and Northern Development.

HOW TO APPLY

higher standard roads designed to provide permanent access from an existing permanent road to a resource project which has been brought to the pre-production-production stage.

WINNIPEG DESIRABLE ROAD STANDARDS

Desirable Design Speed	Width of Right of Way	Travelled Surface	Shoulders	Bridge Design Height	Width & Height	Maximum Gradient	Maximum Curvature
30 m.p.h.	100'	18" x 3'	1120-516	24" x 14" G.	10%	20'	

*Desirable design speed is not related to minimum standards shown.

*Design width should be considered as absolute minimum as any lesser width would be dangerous when heavy duty trucks meet.

Particular sections of road may be built to lesser standards where difficult terrain makes strict adherence to stated standards excessively costly.

COST-SHARING TERMS

The Department may authorize a federal contribution of up to 2/3 of the cost of construction but not exceeding 15% of actual capital invested by the Company prior to commencement of commercial production or exploration, or \$10,000 per mile, whichever is the lesser.

LOCATION

The location of the Permanent Access Road must be approved by the Minister of Indian Affairs and Northern Development.

HOW TO APPLY

Application forms for financial assistance for Permanent Access Roads are available from: Director, Northern Economic Development Branch, Department of Indian Affairs and Northern Development, 400 Laurier Ave., West, Ottawa, Ontario.

General Information

SURFACE RIGHTS

A federal contribution will be made only toward the construction of roads whose right-of-way is vested in the Crown. The Company making application for assistance shall secure for the Crown, all surface rights required for the entire right-of-way of the road.

PUBLIC USE

Public use must not be restricted by virtue of part or parts of the road being under private jurisdiction. All roads on Crown land or those whose surface rights have been relinquished to the Crown in the Territories remain public roads notwithstanding contributions which may be made to their construction and maintenance by private companies or individuals.

NOTE:

The Department of Indian Affairs and Northern Development or the appli-

MINERAL INFORMATION (cont'd)

Whether the operations or proposed operations are in the natural resource development, tourist facility, or secondary industry category, all applicants are required to supply the Department with the following in support of their application.

- (A) Description of existing or proposed operations
- (B) Topographic map (4 miles to the inch) showing proposed road in relation to nearest existing permanent road, airstrip or harbour.
- (C) Proof of ownership or lease of the property on which the operations are to be carried out or are being carried out. (Also note "Surface Rights").
- (D) A statement on the companies' financial background.

SEE NEXT 2 PAGES FOR ADDITIONAL INFORMATION NEEDED FROM SPECIFIC INDUSTRIES.

INDUSTRIAL, TOURIST AND RECREATION ENTERPRISES SUCH AS HUNTING AND FISHING CAMPS NEEDED TO SUPPLY:

- (a) Marketing plan
- (b) Feasibility report
- (c) Number of people employed or expected to be employed
- (d) Expected yearly production (in dollars)

LOGGING AND SAWMILL OPERATIONS

- (a) Map showing merchantable volumes by operating areas and road system
- (b) Annual cut list, pulpwood, logs, mining timber, poles, piling and firewood
- (c) Marketing plan
- (d) Feasibility report.

MINERALS, OIL AND GAS

- (a) Estimate of future exploratory expenditures in the area
- (b) Present number of employees on the project (*)
- (c) Estimated effect of a road in cost reduction and possible increase in the life of the project (*)
- (d) Estimate of oil, gas, or ore reserves
- (e) Estimated rate and cost of production (*)
- (f) Total expenditures to be made to put mine, oil or gasfield in production including exploration costs (*)
- (g) Feasibility report
- (*) Where applicable

DEFINITION OF TERMS

1. "Resources" include minerals, valuable stone, coal, oil and gas, forests, fish for bearing animals arable land, land surface, water and the use of such naturally occurring substances or phenomena for recreation (tourism) or commerce.
2. "Exploration Stage" means that stage during which a search is being conducted for one or more specific natural resources with a view to eventual development and exploitation and ends once the occurrence of a specific resource has been established.
3. "Development Stage" means that stage commencing when a specific natural resource is discovered or found to occur in a particular vicinity and during which assessment work, must be carried out to determine the size of the resource, and ends when a decision has been made to install facilities for production or exploitation.
4. "Pre-Production and Production" means that stage which commences once a decision has been reached to install the facilities required to produce or exploit a specific resource and continues for the life of the project.
5. "Public Road" is a road the title to which is vested in the Crown and which the public is legally entitled to use.
6. "Construction" is the planning, surveying, design, preparation and processing of contract specifications, supervision, construction and other related work on (i) each new, relocated, or reconstructed road, including all necessary structures and facilities, and (ii) replacement of structures or facilities on an existing road at a higher standard.
7. "Maintenance" is the preserving and keeping of each road, structure and other facility contained within the designated right-of-way as nearly as possible to its constructed design standard or as subsequently improved and such additional work as is necessary to keep traffic moving safely, but not including deviation from its original design standards such as relocation of grade or right-of-way or replacement of structure or facility to a higher design standard. "Maintenance" is deemed to commence at such time after construction has been completed and the contractor has turned the road over to the contracting government, as the road or any part thereof is officially opened for public use.
8. "Minister" means the Minister of Indian Affairs and Northern Development.
9. "Year" means the fiscal year ending on the 31st of March.

RESOURCE AIRPORTS IN THE YUKON AND NORTHWEST TERRITORIES

INTRODUCTION

The following policy governing Resource Airports in the Yukon and Northwest Territories was created to encourage and assist exploration and development and was announced in 1966 by the Minister of Indian Affairs and Northern Development.

Definitions, financing and cost-sharing information, construction, maintenance and operation of these airports are listed and described in the following pages.

Resource Airports are divided into two categories:

DEFINITIONS

1) *EXPLORATORY AIRPORTS*

These are built to assist initial exploratory work or to assist in locating mineral or other natural resources.

2) *PREPRODUCTION AIRPORTS*

These are built to assist in the preproduction or early production phases of resource exploitation and are constructed to a higher standard than Exploratory Airports.

FINANCING & COST-SHARING

Cost-sharing agreements may be made between the Government of Canada and a natural resource development company, a private tourist or recreational enterprise or an established air carrier.

EXPLORATORY AIRPORTS

Federal government assistance is available to defray fifty per cent of the cost of an exploratory airport up to a maximum federal expenditure of \$20,000. Where the full cost of such an airport exceeds \$40,000, the private cost-sharing interest will bear the full cost in excess of this amount.

PREPRODUCTION AIRPORTS

Federal government assistance is available to defray fifty per cent of the cost of a preproduction airport up to a maximum federal expenditure of \$100,000 per airport. The private company will contribute the balance and will bear fully any airport construction cost exceeding \$200,000.

Work done by the private company prior to entry into a cost-sharing agreement may sometimes be accepted for cost-sharing purposes, but only if the initial application for assistance is received by the Department of Indian Affairs and Northern Development before the work is started, and then only if the work qualifies for assistance under the conditions prescribed in the subsequent agreement.

CONSTRUCTION
STANDARDS

Both categories of airports are to be built to the standards considered adequate by the Department of Transport for the airports' intended use.

CONSTRUCTION AND
MAINTENANCE
RESPONSIBILITIES

The private company has the responsibility for construction, maintenance, and operation of the airport in either category.

PROVISION FOR
PUBLIC USE

Airports constructed under this policy are to be available for public use at all reasonable times. They are to be built in areas where the surface rights to the land are held by the federal government. Under certain circumstances, landing fees (to help defray airport maintenance costs) may be charged by the company operating the airport. Approval must be obtained from the Department of Indian Affairs and Northern Development before landing fees can be charged.

APPLICATION FOR
ASSISTANCE

It is the policy of the Department of Indian Affairs and Northern Development to negotiate only with a single company or agency in regard to cost-sharing for a Resource Airport. If more than one company or agency is involved, it is suggested that they form a single syndicate or agency to deal with the Department.

Requests for further information and application forms for Resource Airports Construction Assistance should be made to the Director, Development Branch, Department of Indian Affairs and Northern Development, 400 Laurier Avenue West, Ottawa 4, Ontario.

THE QUEEN'S PRINTER
OTTAWA, 1969

Catalogue No. R2-3068

Office of Minerals Exploration
U.S. Geological Survey

Public Law 85-701
85th Congress, S. 3817
August 21, 1958

AN ACT

72 Stat. 700.

To provide a program for the discovery of the mineral reserves of the United States, its Territories, and possessions by encouraging exploration for minerals, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That it is declared to be the policy of the Congress to stimulate exploration for minerals within the United States, its Territories and possessions.

Minerals
exploration.

SECTION 1. The Secretary of the Interior is hereby authorized and directed, in order to provide for discovery of additional domestic mineral reserves, to establish and maintain a program for exploration by private industry within the United States, its Territories and possessions for such minerals, excluding organic fuels, as he shall from time to time designate, and to provide Federal financial assistance on a participating basis for that purpose.

SEC. 2. (a) In order to carry out the purposes of this Act, and subject to the provisions of this section, the Secretary is authorized to enter into exploration contracts with individuals, partnerships, corporations, or other legal entities which shall provide for such Federal financial participation as he deems in the national interest. Such contracts shall contain terms and conditions as the Secretary deems necessary and appropriate, including terms and conditions for the repayment of the Federal funds made available under any contract together with interest thereon, as a royalty on the value of the production from the area described in the contract. Interest shall be calculated from the date of the loan. Such interest shall be at rates which (1) are not less than the rates of interest which the Secretary of the Treasury shall determine the Department of the Interior would have to pay if it borrowed such funds from the Treasury of the United States, taking into consideration current average yields on outstanding marketable obligations of the United States with maturities comparable to the terms of the particular contracts involved and (2) plus 2 per centum per annum in lieu of recovering the cost of administering the particular contracts.

Exploration
contracts.Interest
rates.

(b) Royalty payments received under paragraph (a) of this section shall be covered into the miscellaneous receipts of the Treasury.

Royalty
payments.

(c) When in the opinion of the Secretary an analysis and evaluation of the results of the exploration project disclose that mineral production from the area covered by the contract may be possible he shall so certify within the time specified in the contract. Upon certification, payment of royalties shall be a charge against production for the full period specified in the contract or until the obligation has been discharged, but in no event shall such royalty payments continue for a period of more than twenty-five years from the date of contract. When the Secretary determines not to certify he shall promptly notify the contractor. When the Secretary deems it necessary and in the public interest, he may enter into royalty agreements to provide for royalty payments in the same manner as though the project had been certified.

Certification.

Agreements.

(d) No provision of this Act, nor any rule or regulation which may be issued by the Secretary shall be construed to require any production from the area described in the contract.

(e) The Secretary shall establish and promulgate such rules and regulations as may be necessary to carry out the purposes of this Act: *Provided, however,* That he may modify and adjust the terms and conditions of any contract to reduce the amount and term of any royalty payment when he shall determine that such action is necessary

Adjustment
of contract.

and in the public interest: *Provided further*, That no such single contract shall authorize Government participation in excess of \$250,000.

(f) No funds shall be made available under this Act unless the applicant shall furnish evidence that funds from commercial sources are unavailable on reasonable terms.

"Exploration."

SEC. 3. As used in this Act, the term "exploration" means the search for new or unexplored deposits of minerals, including related development work, within the United States, its Territories and possessions, whether conducted from the surface or underground, using recognized and sound procedures including standard geophysical and geochemical methods for obtaining mineralogical and geological information.

Advisory services.

SEC. 4. Departments and agencies of the Government are hereby authorized to advise and assist the Secretary of the Interior, upon his request, in carrying out the provisions of this Act and may expend their funds for such purposes, with or without reimbursement, in accordance with such agreements as may be necessary.

Reports to
Congress and
President.

SEC. 5. The Secretary of the Interior is authorized and directed to present to the Congress, through the President, on March 1 and September 1 of each year, a report containing a review and evaluation of the operations of the programs authorized in this Act, together with his recommendations regarding the need for the continuation of the programs and such amendments to this Act as he deems to be desirable.

Appropriation.

SEC. 6. There are hereby authorized to be appropriated, from any funds in the Treasury not otherwise appropriated, such sums as may be necessary to carry out the provisions of this Act.

Approved August 21, 1958.

These regulations are reproduced from the follow-
ing Federal Register documents:

[F.R. Doc. 65-2294; Filed, Mar. 4, 1965;
8:46 a.m.]

[F.R. Doc. 66-7220; Filed, June 30, 1966;
8:46 a.m.]

[F.R. Doc. 67-10624; Filed, Sept. 11, 1967;
8:48 a.m.]

GENERAL PROVISIONS

- Sec.
 - 229.1 Purpose.
 - 229.2 Definitions.
 - 229.3 Eligible minerals or mineral products.
 - 229.4 Operator's property rights.
- APPLICATIONS**
- 229.5 Form and filing.
 - 229.6 Information required.
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 - 229.8 Approval.

EXPLORATION CONTRACTS

- 229.9 Government participation.
- 229.10 Allowable costs.
- 229.11 Repayment by the operator.
- 229.12 Interest on amount of Government participation.
- 229.13 Limitation on the amount of Government participation.
- 229.14 Government not obligated to buy.
- 229.15 Title to and disposition of property.

AUTHORITY: The provisions of this Part 229 issued under
sec. 2(e), 72 Stat. 700; 30 U.S.C. 642(e).

GENERAL PROVISIONS

229.1 Purpose.
The regulations in this part govern the obtaining
of Federal financial assistance in conducting ex-
ploration for mineral reserves, excluding organic
fuels, in the United States, its territories or posses-
sions.

229.2 Definitions.
As used in this part:
(a) "Exploration" means the search, including
related development work, for new or unexplored
mineral deposits within a specified area or parcel
of ground where geologic conditions favor their
occurrence. Exploration using recognized and
sound procedures, including standard geophysical
and geochemical methods, may be conducted from
the surface or underground to obtain pertinent
geological and mineralogical information. The work
shall not go beyond a reasonable delineation and
sampling of a mineral deposit, and shall not be
conducted primarily for mining or preparation for
mining.

(b) "Operator" means an individual partner-
ship, corporation, or other legal entity that is party
to an exploration contract with the Government.

(c) "Secretary" means the Secretary of the
Interior, or his authorized representative.

(d) "Government" and "Federal" means the
United States of America.

(e) "Commercial sources" means banking insti-
tutions or other private sources of credit.

229.3 Eligible minerals or mineral products.
(a) The following are eligible for Government
financial assistance of 50 percent of the allowable
costs of exploration:

- | | |
|-------------------------------|--------------------------------------|
| Asbestos. | Kyanite (strategic). |
| Bauxite. | Manganese. |
| Beryllium. | Mica (strategic). |
| Cadmium. | Molybdenum. |
| Chromite. | Monazite. |
| Cobalt. | Nickel. |
| Columbium. | Quartz Crystal (pie-
zoelectric). |
| Copper. | Rare Earths. |
| Corundum. | Selenium. |
| Diamond (indus-
trial). | Sulphur. |
| Fluorspar. | Talc (block steatite). |
| Graphite (crucible
flake). | Tellurium. |
| Iron Ore. | Thorium. |
| | Uranium. |

(b) The following are eligible for Government
financial assistance of 75 percent of the allowable
costs of exploration:

- | | |
|---------------------------|-----------|
| Antimony. | Rutile. |
| Bismuth. | Silver. |
| Gold. | Tantalum. |
| Mercury. | Tin. |
| Platinum Group
Metals. | |

(c) Combinations of the minerals or mineral
products named in paragraphs (a) and (b) of this
section may be eligible for Government financial
assistance of 62.5 percent of the allowable costs
of exploration.

229.4 Operator's property rights.
The operator must have and preserve the right
to possession of the land (as owner, lessee, or
otherwise) for a term at least sufficient to complete
the exploration work. (See 229.11(f) regarding
repayment.) The operator shall devote the land and
all existing improvements, facilities, buildings, in-
stallations, and appurtenances necessary to the
purposes of the exploration.

APPLICATIONS

229.5 Form and filing.
An application for Federal financial assistance
must be submitted in duplicate on forms which may
be obtained from and filed with either:
Office of Minerals Exploration
Geological Survey,
Department of the Interior,
Washington, D.C. 20242

or Field Officers, Office of Minerals Exploration,
Geological Survey. The regions which they serve
and their Post Office addresses are as follows:

Region I: Idaho, Montana, Oregon, and Washington—
Room 656, West 920 Riverside Avenue, Spokane, Wash-
ington 99201.

Region II: Alaska, California, Hawaii, and Nevada—
Building 2, 345 Middlefield Road, Menlo Park, California
94025.

Region III: Arizona, Colorado, Kansas, Nebraska, New
Mexico, North Dakota, Oklahoma, South Dakota, Texas,
Utah, and Wyoming—Building 25, Federal Center, Denver,
Colorado 80225.

Region IV: Alabama, Arkansas, Connecticut, Delaware,
Florida, Georgia, Illinois, Indiana, Iowa, Kentucky, Louisiana,
Maine, Maryland, Massachusetts, Michigan, Minnesota,
Mississippi, Missouri, New Hampshire, New Jersey, New
York, North Carolina, Ohio, Pennsylvania, Rhode Island,
South Carolina, Tennessee, Vermont, Virginia, West Virginia,
and Wisconsin—Room 11, Post Office Building, Knoxville,
Tennessee 37902.

229.6 Information required.
(a) Each application shall fully describe the
proposed exploration, and shall include all detailed
data called for by the application form. The Sec-
retary may require the filing of additional infor-
mation, including financial statements, reports,
maps, or charts, and exhibits and such physical
on-site examinations as he deems necessary.

(b) The application must include evidence that
funds for the exploration work are unavailable on
reasonable terms from commercial sources. The
evidence shall include information as to the com-
mercial sources to which applications were made,
the amounts requested, and the reasons why loans
were not obtained.

(c) The application must include a certification
by the applicant that he would not normally under-
take the exploration at his sole expense under
current conditions or circumstances.

229.7 Criteria.
The following factors will be considered and
weighed in passing upon applications:

(a) The geologic probability of a significant
discovery being made.

(b) The estimated cost of the exploration in
relation to the size and grade of the potential
deposit.

(c) The plan and method of conducting the
exploration.

(d) The accessibility of the project area.

(e) The background and operating experience
of the applicant.

(f) The applicant's title or right to possession of
the property.

229.8 Approval.
If the application is approved, the Government
may enter into an exploration contract with the
applicant upon terms and conditions which the Sec-
retary deems necessary and appropriate as set forth
in the contract form furnished by the Government.

EXPLORATION CONTRACTS

229.9 Government participation.
The Government will contribute not more than
the percent of the total allowable costs of explora-
tion which is specified in each exploration project
contract. The percent specified in each contract
will depend upon the minerals or mineral products
sought and the Government contribution provided
by 229.3 at the time the contract is made.

229.10 Allowable costs.
(a) The Government, to the extent provided in
the exploration contract, will contribute to:
(1) The necessary, reasonable, and direct actual
costs of performing the exploration, including the
costs of: labor, supervision, and outside consultants.

operating materials, supplies, and equipment, initial rehabilitation or repair of existing buildings, installations, fixtures, and operating equipment, construction of buildings, fixed improvements, and installations; repairs and maintenance of operating equipment, analytical work, accounting, payroll and sales taxes, and employers' liability or employees' compensation insurance; payments by the operator to independent contractors; and such other necessary, reasonable, and direct actual costs as may be approved by the Government in the course of work; and

(2) The fixed unit costs agreed upon by the operator and the Government in terms of units of work to be performed (per foot of drifting, per foot of drilling, etc.) in lieu of actual costs.

(b) The Government will not contribute to costs incurred before the date of the contract, or to costs of or incident to:

(1) Acquiring, owning or possessing land with any existing improvements, facilities, buildings, installations, and appurtenances, or the depreciation and depletion thereof;

(2) General overhead, corporate management, interest and taxes (other than payroll and sales taxes);

(3) Insurance (other than employers' liability or employees' compensation insurance); and

(4) Damages to persons or property (other than authorized repair to or replacement of equipment or other property used in the work).

229.11 Repayment by the operator.

(a) If the Secretary considers that as a result of the exploration, mineral or metal production from the area covered by the contract may be possible, he shall so certify in writing to the operator within the time specified in the contract.

(b) When the Secretary determines not to certify, he shall promptly so notify the operator provided the operator has completed all obligations under the contract.

(c) The operator shall pay the Government a royalty on all minerals or metals produced from the land described in the contract and any other royalty as may be provided therein:

(1) Irrespective of any certification of possible production—from the date of the contract to the date of notice that certification will not be made, or until the total amount contributed by the Government with interest is fully repaid, whichever occurs first; or

(2) Irrespective of any certification of possible production—if the Secretary, deeming it necessary and in the public interest, enters into an agreement to provide for royalty payments.

(3) If a certification of possible production is issued—for a period of ten years (or other period fixed by the contract not exceeding 25 years) from the date of the contract, or until the total amount contributed by the Government, with interest, is fully repaid, whichever occurs first.

(d) The Government's royalty shall be 5 percent of the "gross proceeds" (including any bonuses, premiums, allowances, or other benefits) from the production sold, in the form sold (ore, concentrate, metal, or equivalent) at the point of delivery (the f.o.b. point) except, that charges of the buyer (not the operator or producer) arising in the regular course of his business, and shown on the buyer's settlement sheets as deductions (such as treatment processes performed by the buyer, sampling and assaying to determine the value of the production sold, and freight payable by the buyer to a carrier (not the operator or producer)) shall be allowed as deductions in arriving at the "gross proceeds" as that term is used in this section. No costs of the operator or producer are deductible in arriving at the "gross proceeds" as that term is used in this section. The term "treatment processes" as used in this paragraph means those processes (such as milling, concentrating, smelting, refining, or equivalent) applied to the cruds or other production after it is extracted from the ground to put it into a commercially marketable form, excluding fabricating or manufacturing.

(e) If any production (ore, concentrate, metal, or equivalent) remains unsold or is not used by the operator or producer in integrated manufacturing or fabricating operations (for instance, if it is stockpiled) after the lapse of six months from the date it is extracted from the ground, the Government, at its option, may require the computation and payment of its royalty on the value of such production in the form (ore, concentrate, metal, or equivalent) it is in at the time the Government elects to exercise its option. If any production is used by the operator or producer in integrated manufacturing or fabricating operations, the Government's royalty on such production shall be computed on the "value" thereof in the form in which and at the time when it is used. "Value" as used in this section means what is or would be gross income from mining operations for percentage depletion purposes in Federal income tax determination, or the market value, whichever is greater.

(f) (1) To secure the payment of the Government's royalty, the contract shall provide for a lien upon the operator's interest in the land, upon any production from the land, and upon any interests in the land other than the operator's interest. However, the Secretary may accept the undertaking of a surety company or third person in lieu of a lien upon interests in the land other than the operator's interest. In circumstances where the Secretary deems it to be in the public interest, the requirement for a lien or other undertaking concerning interests in land, other than the lien upon the operator's interest, may be omitted from the Contract.

(2) If the operator is not the producer (for example, if the operator transfers or does not retain his interest in production or in the land), the operator shall remain liable for the payment of the Government's royalty.

(g) If, in any particular case, the Secretary finds that it would be more economical or practicable to compute the Government's royalty upon some basis other than "gross proceeds" or "value", as those terms are used in this section, or upon the production in some form other than that in which it is sold, held, or used in integrated operations, he may agree with the operator, either in the original exploration contract or by an amendment thereof, upon some other basis of computation.

(h) Nothing in this part shall be construed as imposing any obligation on the operator to engage in any mining or production operations.

(i) The Secretary may modify and adjust the terms and conditions of any contract to reduce the amount and terms of any royalty payment when he shall determine that such action is necessary and in the public interest.

229.12 Interest on amount of Government participation.

(a) Simple interest is calculated from the first day of the month following the date Federal funds are made available until the period specified for royalty payments expires or until the amount of Federal funds contributed, including interest, is fully repaid, whichever occurs first.

(b) The rate of interest shall be fixed by the Secretary at not less than the rate the Department of the Interior would be required to pay if it borrowed from the Treasury, plus a two percent interest charge in lieu of the actual cost to the Government of administering the contract.

(c) Paragraphs (a) and (b) of this section shall not be construed to increase the rate of royalty or to extend the period for which the royalty is payable as set forth in 229.11.

229.13 Limitation on the amount of Government participation.

No single contract shall authorize Government participation in excess of \$250,000.

229.14 Government not obligated to buy.

Nothing in this part or in any contract entered into pursuant to this part shall be construed as imposing any obligation on the Government to purchase any materials mined or produced from the land which is the subject of such contract.

229.15 Title to and disposition of property.

Facilities, buildings, fixtures, equipment, or other items or groups of items (such as pipe, rail, steel, etc.), costing more than \$50.00 each, paid for or purchased with funds contributed jointly by the operator and the Government, although title may be taken in the name of the operator, shall belong to the operator and the Government jointly, in proportion to their respective contributions to the extent set forth in the contract. The exploration contract shall make suitable provisions also for their disposal for the joint account of the operator and the Government.

Diamond Drilling

_____ holes, average depth _____, total depth _____. Estimated number of feet per shift _____, _____ shifts per day, _____ days per month. Time required _____ months.

1. Independent Contracts

Mobilization and demobilization _____ \$
Diamond drilling _____ core
_____ ft., 0 to _____ ft., at
at \$ _____/ft. \$
_____ ft., _____ to _____ ft.,
at \$ _____/ft. \$
_____ ft., _____ to _____ ft.,
at \$ _____/ft. \$

_____ ft. reaming and casing _____ \$
at \$ _____/ft. \$

_____ hrs. cementing and redrilling
at \$ _____/hr.

_____ hrs. surveying at \$ _____/hr.

_____ hrs. standby time at \$ _____/hr.

_____ \$

2. Labor and Supervision

_____ drillers at \$ _____/shift
times shifts \$

_____ helpers at \$ _____/shift
times shifts

_____ \$

At _____ feet of drilling \$ /ft.

3. Operating Materials and Supplies

\$

\$

At _____ feet of drilling \$ /ft.

4. Operating Equipment

<u>Owned by Applicant</u>	<u>Value</u>	<u>Allowed Deprec./mo.</u>
	\$	\$

\$

At _____ months drilling \$

<u>To Be Purchased</u>	<u>Cost</u>	<u>Less 50% No Salvage</u>
	\$	\$

_____ \$

3.

To Be Rented

Monthly
Rental

\$

\$

At _____ mos.

\$

Divide by feet of drilling _____

\$ /ft.

5 and 6.

None

7. Miscellaneous

_____ wooden-cardboard core boxes

at \$ _____/ea.

\$

Geologist _____ (what part) mo.

at \$ _____/mo.

Assays

_____ determinations for _____

at \$ _____ ea.

_____ determinations for _____

at \$ _____ ea.

\$

Level or Diamond Drill Station

Hoist station

_____ ft. long x _____ ft. wide x _____ ft. high = _____ cu. ft.

Rope raise and bucket dump

_____ ft. long x _____ ft. wide x _____ ft. high = _____ cu. ft.

Dump pocket

_____ ft. long x _____ ft. wide x _____ ft. high = _____ cu. ft.

Total _____ cu. ft.

Estimated time required to cut station, etc., and install timber,
_____ shifts, or _____ mos.

1. Independent Contracts

2. Labor and Supervision

_____ miners at \$_____/shift x _____ shifts \$
_____ helper-trammer at \$_____/shift x _____
_____ shifts

Total \$ _____

FICA and other insurance _____%
Total Labor and Supervision \$ _____
At _____ cu. ft. \$ _____ /cu.ft.

3. Operating Materials and Supplies

_____ b.f. timber at \$_____/M \$
Plus _____% for wedges, blocks, etc.
_____ lbs. powder at \$_____/lb.
_____ caps (if electric _____ to _____
delay) at _____ ea.
_____ gal. diesel fuel at \$_____/gal.
Oil and grease _____% of fuel

\$ _____

At _____ cu. ft. \$ _____ /cu.ft

4. Operating Equipment

<u>Owned by Applicant</u>	<u>Value</u>	<u>Monthly allowed deprec. at 1/60</u>
	\$	\$
		\$ _____
	Total times months	\$
<u>To Be Purchased</u>	<u>Cost</u>	<u>Less 50% No Salvage</u>
	\$	\$
		\$ _____
<u>To Be Rented</u>		<u>Monthly Rental</u>
		\$
		\$ _____
	Total times months	\$ _____
	Total cost Operating Equipment at _____ cu. ft.	\$ /cu.ft.

5 and 6.

None

Timbering

Estimated _____% of drift will require timber. _____ feet of timber will require _____ standard drift sets. One shift will stand, block, and lag _____ sets, or _____ feet. Time required, _____ shifts. At _____ shifts per month, total time required _____ months.

1. Independent Contracts

_____ ft. at \$ _____/ft. \$

2. Labor and Supervision

_____ miners at \$ _____/shift \$
_____ helper-trammer at \$ _____/shift

\$ _____
FICA and other insurance at _____% \$ _____
\$ _____

At _____ feet per shift \$ _____ /ft.

3. Operating Materials and Supplies

_____ posts,
_____ " x _____ " x _____ ' = _____ b.f.
_____ caps,
_____ " x _____ " x _____ ' = _____ b.f.
_____ collar braces,
_____ " x _____ " x _____ ' = _____ b.f.
_____ lagging,
_____ " x _____ " x _____ ' = _____ b.f.
_____ b.f.

At \$ _____/M b.f. \$

Plus _____% for blocks, wedges, etc, \$ _____

At _____ feet of timber \$ _____ /ft.

4. Operating Equipment

<u>Owned by Applicant</u>	<u>Present Fair Value</u>	<u>Allowed Monthly Deprec. at 1/60</u>
	\$	\$

		\$
	At _____ months	\$
<u>To Be Purchased</u>	<u>Cost</u>	<u>Less 50% No Salvage</u>
	\$	\$

		\$
<u>To Be Rented</u>		<u>Monthly Rental</u>
		\$

	At _____ months	\$ _____
Total cost of operating equipment		\$
	At _____ feet of timber	\$ /ft.

Drifting

_____ ft., _____' x _____, clear of timber. Estimated rate of advance
_____ rock section.
_____ ft. per shift. _____ shifts per day, _____ days per month,
_____ months required. _____ holes per _____-ft. round.

1. Independent Contracts

\$ _____ \$

2. Labor and Supervision (per shift)

_____ miners at \$ _____/shift = \$
1 helper-trammer operator at
\$ _____/shift =
1 hoistman, _____ (what part) shift
at \$ _____/shift =

1 engineer-supervisor, _____ (what
part) mo. at \$ _____/mo. =

FICA and other insurance _____%

Total cost/shift

\$ _____
\$ _____
\$ _____

At _____ feet/shift

\$ _____/ft.

3. Operating Materials and Supplies (per _____-foot round)

_____ lbs. powder at \$ _____/100 lbs. \$

_____ caps (if electric, _____ to _____
delay) at \$ _____ ea.

_____ ft. fuse at \$ _____/ft.

_____ -in. water line

w/fittings at \$ _____/ft.

(less 50%--no salvage)

_____ ft. _____-in. air line w/fittings
at \$ _____/ft. (less 50%--no
salvage)

_____ ft. _____-in. water hose

w/fittings at \$ _____/ft.

_____ ft. _____-in. air hose

w/fittings at \$ _____/ft.

_____ gal. diesel fuel at \$ _____/gal.

_____ gal. gasoline at \$ _____/gal.

oil and grease _____% of fuel

_____ ft. _____-in. vent line at
\$ _____/ft. (less 50%--no salvage)

_____ ties at \$ _____ ea.

Steel, 1 replaced/300 ft. at

\$ _____ ea., _____ ft./round

Bits, 300 ft./bit at \$ _____--

_____ -ft. round

Repair parts, \$ _____/round

Steel, 1 replaced/300 ft. at \$ _____ ea.,
 _____ ft./round \$
 Bits, 300 ft./bit at \$ _____ -- _____ -ft.
 round
 Repair parts, \$ _____/round

Total cost per _____ -ft. round \$ _____ or \$ _____/ft.

4. Operating Equipment

<u>Owned by Applicant</u>	<u>Present fair Market Value</u>	<u>Allowable Monthly Depreciation 1/60</u>	
	\$	\$	
			\$ _____
	For _____ mos.		\$
<u>To Be Purchased</u>	<u>Cost</u>	<u>Less 50% No Salvage</u>	
	\$	\$	
			\$ _____
<u>To Be Rented</u>		<u>Monthly Rental</u>	
		\$	
	At _____ mos.		\$ _____
Total cost of Operating Equipment		\$	\$
Divide by _____ feet of drive			\$ _____/ft.

5. Rehabilitation and Repairs

\$

_____ \$

6. New Buildings

\$

_____ \$

7. Miscellaneous

_____ assay determinations for _____
at \$ _____ ea. \$

_____ assay determinations for _____
at \$ _____ ea.

1 accountant _____ (what part) mo.
at \$ _____/mo.

_____ ft. long-hole drilling
at \$ _____/ft.

_____ \$ /ft.

(Sum of 2 through 4 is unit cost for drifting.)

UNITED STATES OF AMERICA
DEPARTMENT OF THE INTERIOR
U. S. GEOLOGICAL SURVEY

EXPLORATION CONTRACT
(Long Form)

Docket No. Commodity Contract No. County State

ONE

It is agreed March 1, 1972, between the United States of America, acting through the
(Date)
Department of the Interior, U. S. Geological Survey, hereinafter called the "Government," and

whose mailing address is _____
hereinafter called the "Operator," as follows:

ARTICLE 1. Authority and scope.--(a) This contract entered into under the authority of Public Law 701, 85th Cong., 2d sess. (72 Stat. 700; 30 U.S.C. § 641 - 646), consists of this form, the attached Annex I (land description), Exhibit A (work and costs), and the maps and documents listed. The work is a search for new or unexplored deposits of the commodity designated above. The Operator shall begin the work on or before April 30, 1972, and, subject to the provisions of Article 9
(Date)

and Exhibit A, shall either have completed the work within 18 months from the date of the contract or shall have incurred allowable costs (see Article 6) in a sum not less than the total cost set forth in Exhibit A.

(b) The total allowable cost of the work set forth in Exhibit A is \$28,200.00. The Govern-
ment will contribute ⁷⁵~~50~~ percent of the allowable costs as they are incurred, in a total sum not in excess of \$21,150.00 in accordance with the provisions of Articles 3, 4, 5, and 6. "Costs incurred" means costs that have been paid or have become due and payable, or that the Government determines have become obligations.

(c) Interest computation.--Simple interest at the rate of 8½ percent shall accrue from the dates Federal funds are made available until the period specified for payment of royalty expires, or until the amount of Federal funds contributed is fully repaid with interest.

(d) The Operator shall not transfer or assign this contract or any right or obligation there-
under without the written consent of the Government.

ARTICLE 2. Operator's right in land.--(a) The Operator represents and undertakes that Annex I correctly describes the land which is the subject of this contract and the nature of the Operator's right of property and possession therein (whether as owner, lessee, or otherwise), and that such right, title, or interest is subject only to the following claims, liens, or encumbrances:

ANNEX I

(b) The Subordination Agreement of the holder of any claim, lien, or encumbrance listed above and (if the Operator does not hold the legal title) the lien agreement of any holder of the legal title of the land (lessor, seller, optionor, etc.) are attached as follows:

ANNEX I

(c) The Operator shall preserve and maintain his right, title, or interest in the land and his right to the possession thereof for the purposes of this contract, and shall devote the land and all existing improvements, facilities, buildings, installations, and appurtenances to the purposes of this contract. The Operator shall neither transfer, convey, nor surrender the land nor any right, title, or interest therein, nor permit nor suffer any claim, lien, or encumbrance thereon, without expressly referring to and providing in the instrument of conveyance, lien, or encumbrance for the preservation of the Government's right to a royalty on production and liens for the payment thereof. Two true copies of such instrument shall be furnished to the Government. If the Government's rights to royalty as provided in Article 7 have been terminated, the provisions of this paragraph (c) shall become inapplicable.

ARTICLE 3. Performance of the work.--(a) Operator's responsibility.--The work shall be performed diligently, efficiently, in a workmanlike manner in accordance with good mining standards, and in compliance with State laws governing health, safety, and liability insurance covering employment. The Operator shall provide suitable and adequate equipment, facilities, materials, supplies, and labor to complete the work as specified in Article 1(a).

(b) Independent contracts.--To the extent that the allowable costs are estimated in Exhibit A with express reference to performance by independent contractors on a unit-price basis (such as per foot of drilling, per foot of drifting, per hour of bulldozer operations), the work may be so performed (see Article 6(a), Category (1)). Any such independent contract shall refer to some specific and identifiable part of the work, and shall be subject to all of the pertinent terms and conditions of this exploration contract; but the Government shall not be considered a party thereto, and its rights under this contract, including the right to terminate its contributions, shall not be affected thereby. Regardless of the provisions of any such independent contract, the Government will participate in payments to the independent contractor only as to work performed in accordance with the provisions of this exploration contract, and only to the extent that the Government deems the unit prices for the work under the independent contract to be reasonable.

(c) Government may inspect.--The Operator shall consult with and inform the Government on all phases of the work as it progresses. The Government may enter at all reasonable times to inspect the work under the contract and production operations during the period that royalty is payable to the Government. The Operator shall provide the Government with all reasonable means of access for such inspections.

ARTICLE 4. Contribution by the Government.--The Government will make its contribution on the basis of the monthly vouchers referred to in Article 5(b), but all payments by the Government are provisional only, subject to audit. Until the account between the Operator and the Government is finally audited and settled and the Operator's final report has been received, the Government may withhold such sums as are necessary to protect its interests. The Government may make payments for the account of the Operator directly to independent contractors and suppliers rather than to the Operator.

ARTICLE 5. Reports, accounts, audits.--(a) Operator's records.--The Operator shall keep suitable records and accounts of the work performed and of any production in which the Government may have an interest; and shall preserve those with respect to work performed for at least three years after final payment by the Government, and those with respect to production for at least three years after any obligation to pay royalties to the Government has terminated. The Government may inspect and audit said records and accounts at any time, either by itself or by a certified public accountant. The Comptroller General of the United States or his representative, until the expiration of said three-year periods, shall have access to and the right to examine all pertinent books, documents, papers, and records of the Operator. If work under this contract is carried on in conjunction with any other operations, or if labor, supervision, services, materials, supplies, equipment, facilities, or other requirements for carrying on the work are also used in connection with other operations, the costs shall be segregated and accounted for on a basis and by methods and accounts that are satisfactory to and approved by the Government.

(b) Monthly reports.--The Operator shall provide the Government with four copies of monthly reports in three sections as follows:

- (1) Operator's Monthly Voucher claiming costs for work performed;
- (2) Operator's Progress Report showing the number of units of the various types of work performed; and
- (3) a narrative report of the work performed during the reporting period, including adequate engineering-geological maps or sketches, drill hole logs and locations, and assay reports on samples taken concurrently with advance in mineralized ground.

(Forms for reporting under (1) and (2) above will be provided by the Government; however, the original of the Operator's Monthly Voucher shall be supported by documentary evidence, such as certified copies or transcripts of payrolls and invoices, for all costs claimed under Article 6 (a) (1).)

(c) Final report.--Upon completion of the work or termination of the Government's obligation to contribute to costs, the Operator shall furnish the Government with three copies of a final report (in addition to the final monthly report). This final report shall include a geological and engineering evaluation of the results of the work performed under the contract with an estimate of the ore reserves resulting from such work, complete assay data, adequate geological and engineering maps or sketches, and a summary of the work performed and the related costs.

(d) Report of sales.--The Operator shall provide the Government with suitable accounting and documentary evidence covering all production to which the Government's royalty relates, such as two copies of smelter or concentrator settlement sheets and certified accounts of production and sale or other disposition of production.

(e) Compliance with requirements.--If the Government determines that any of the Operator's reports, records, or accounts are insufficient or incomplete, or if the Operator fails to make them, the Government may procure the preparation or completion of the same with suitable attachments as an expense of the work to which the Operator shall contribute. The Government may withhold approval and payment of any vouchers relating to insufficient or incomplete reports, records, or accounts.

ARTICLE 6. Costs.--(a) Allowable costs.--The allowable costs of the work to which the Government will contribute are limited to:

(1) the necessary, reasonable, and direct actual costs that are estimated in Exhibit A by categories as specified in this article; and

(2) fixed costs for units of work to be performed (per foot, per hour, etc.) agreed upon in lieu of actual costs and set forth in Exhibit A.

The Government will not contribute to costs under any category or subcategory omitted from the estimate of costs in Exhibit A. Any excess over any estimate which is indicated as the maximum of any category, subcategory, or item, either as to requirement or related cost; any excess over a fixed unit cost; and any excess over the total allowable cost of the work are not allowable. The Operator shall incur such excesses for his own account without contribution by the Government, but the Operator is not obligated to incur more than his agreed percentage of the total allowable cost of the work.

Any category or subcategory or element thereof not designated as a maximum in this article, or in Exhibit A may be exceeded, provided that the total allowable cost of the work, which is a maximum, is not exceeded.

CATEGORY (1)--INDEPENDENT CONTRACTS.--(See Article 3(b)). The total of this category and the average unit cost estimated for each type of work to be performed under an independent contract are maximums.

CATEGORY (2)--PERSONAL SERVICES.

Subcategory (a)--Supervision and Technical Services.--All elements of this subcategory (number of supervisors, technicians, outside consultants, periods of employment, rates of pay, and total) are maximums.

Subcategory (b)--Labor.

CATEGORY (3)--OPERATING MATERIALS AND SUPPLIES.--Includes such items as drill bits and steel, explosives, fuel, pipe, power, timber, rail, and small tools costing less than \$50 each.

CATEGORY (4)--OPERATING EQUIPMENT.

Subcategory (a)--Rental.--The number of each rented item [6 mine cars, 1 truck], the rate of rental [\$100 per month, \$5 per hour], and the total of this subcategory are maximums.

Subcategory (b)--Purchases.--The total of this subcategory is a maximum.

Subcategory (c)--Depreciation.--All elements of this subcategory (time periods, rate of depreciation, and subcategory total) are maximums.

CATEGORY (5)--INITIAL REHABILITATION AND REPAIRS.--Costs of items listed under this category include all requirements, such as labor, materials and supplies, and supervision at a rate not higher than provided for in Category (2), and shall not be duplicated under any other category. The total of this category is a maximum.

Subcategory (a)--Initial rehabilitation and repairs of existing buildings, fixtures, and installations (exclusive of mine workings).--The total of this subcategory is a maximum.

Subcategory (b)--Initial rehabilitation and repairs of operating equipment.--The total of this subcategory is a maximum.

CATEGORY (6)--NEW BUILDINGS, FIXTURES, AND INSTALLATIONS (EXCLUSIVE OF MINE WORKINGS).--Costs of items listed under this category include all requirements, such as labor, materials and supplies, and supervision at a rate not higher than provided for in Category (2), and shall not be duplicated under any other category. The total of this category is a maximum.

CATEGORY (7)--MISCELLANEOUS.--Includes requirements and costs that do not fall within any of the first six categories, such as repairs other than initial and maintenance of operating equipment, analytical work, prints and other reproductions, accounting, Operator's share of payroll taxes, liability insurance covering employment, travel, and communications.

(b) Nonallowable costs.--In addition to the limitations imposed by paragraph (a) of this Article 6 the Government will not contribute to the following costs:

(1) Costs of the land, such as rental, depreciation, depletion, or other costs of acquiring, owning, or holding possession;

(2) Indirect costs, such as general overhead, corporate management, interest, taxes (other than payroll and sales taxes), insurance (other than liability insurance covering employment), damages to persons, damages to property (other than necessary repairs or replacements of equipment or other property used in the work);

(3) Previous work performed or costs incurred before the date of this contract; and

(4) Deferred payments.--Any costs incurred by the Operator under any rental-purchase agreement, installment-purchase agreement, or any agreement for the purchase of goods under the provisions of which payment of the full purchase price is deferred more than 90 days from the delivery of the goods, unless the purchase agreement is approved by the Government in writing.

(c) Reductions in costs.--The Operator shall account for and give the Government credit for any incidental benefits, credits, or money received in the ordinary course of business in prosecuting the work (as by salvage or sale of materials or equipment, furnishing of room or board, furnishing of power or services to third persons, rebates or discounts on purchases, etc.), in the same ratio in which the Government contributes to costs; and such amounts shall be treated as a reduction in costs incurred so that they are available for use within the limit of the original total cost. The provision does not apply to receipts from production which are subject to the Government's royalty under the provisions of Article 7.

ARTICLE 7. Repayment by Operator.--(a) Certification.--If the Government considers that mineral or metal production from the land covered by the contract may be possible as a result of the exploration work, it shall so certify in writing to the Operator at any time not later than six months after a sufficient final report and final accounting (see Article 5) have been furnished.

(b) Royalty on production.--The Operator, whether or not the producer (for example, if the Operator either transfers or does not retain his interest in the land), shall pay to the Government a royalty on all minerals and metals mined or produced from the land as follows:

(1) irrespective of any certification of possible production--from the date of the contract until the lapse of the time within which the government may issue such certification or until the total net amount contributed by the Government is fully repaid with interest, whichever occurs first; or

(2) if the Government issues a certification of possible production--for a period of ten years from the date of the contract, or until the total net amount contributed by the Government is fully repaid with interest, whichever occurs first.

(c) Payment of royalty.--(1) The Government's royalty shall be five percent of the gross proceeds (including any bonuses, premiums, allowances, or other benefits) from the production sold, in the form sold (ore, concentrate, metal or equivalent), at the point of delivery (the f.o.b. point); except, that charges of the buyer arising in the regular course of business and shown as deductions on the buyer's settlement sheets (such as treatment processes performed by the buyer, sampling and assaying to determine the value of the production sold, and freight payable by the buyer to a carrier (not the Operator or producer)), shall be allowed as deductions in arriving at the "gross proceeds" as that term is used herein. No costs of the Operator or Producer are deductible in arriving at the "gross proceeds" as that term is here used.

The term "treatment processes" means those processes (such as milling, concentrating, smelting, refining, or equivalent, but excluding fabricating or manufacturing) applied to the crude ore or other production after it is extracted from the ground to put it into a commercially marketable form.

(2) The Government's royalty shall be computed and paid currently upon each lot sold, held, or used in integrated operations, as the case may be.

(d) Unsold production.--If any production (ore, concentrate, metal, or equivalent), after the lapse of six months from the date the ore was extracted from the ground, remains neither sold nor used in integrated manufacturing or fabricating operations (for instance, if it is stockpiled), the Government, at its option, as long as it so remains, may require the computation and payment of its royalty on the value of such production in the form (ore, concentrate, metal, or equivalent) it is in when the Government elects to require computation and payment. If any production is used in integrated manufacturing or fabricating operations before the Government makes its election, the Government's royalty on such production shall be computed on the value thereof in the form in which and at the time it is so used. "Value" as here used means what is or would be gross income from mining operations for percentage depletion purposes in Federal income tax determination or the market value, whichever is greater.

(e) Lien for payment.--To secure the payment of royalty (see Article 7(b)), the Operator hereby grants to the Government a lien upon his interest in the land and upon any production of minerals and metals therefrom until the royalty claim is extinguished by lapse of time or is fully paid.

(f) Notice to purchasers.--The Operator or producer shall give notice of the Government's claim for royalty to any purchaser of the production, and shall authorize and direct such purchaser to pay the royalty directly to the Government and to furnish the Government with copies of the settlement sheets. If the records of any production and sales or other disposition of production, whether the production is by the Operator or by others, are not made available to the Government, the amount of the royalty may be estimated by the Government, and this estimate shall be final and binding upon the Operator or producer.

(g) No obligation to produce.--Nothing in this contract shall be construed as imposing any obligation on the Operator or the Operator's successor in interest to engage in any production operations.

(h) Government not obligated to buy.--Nothing in this contract shall be construed as imposing any obligation on the Government to purchase any minerals and metals mined or produced from the land.

ARTICLE 8. Interests in purchased property.--(a) Title and ownership.--All costs under this contract shall be incurred by the Operator in the Operator's own name and for the Operator's own account; but any property acquired to the cost of which the Government contributes shall belong to the Operator and the Government jointly in proportion to their respective contributions although title thereto shall be taken in the name of the Operator.

(b) Preservation of property.--Until the final disposal of any property in which the Government has an interest, the Operator shall preserve and protect same for the best interest of the Government, and any reasonable and necessary cost thereof will be treated as an allowable cost of the exploration. After the completion of the work, termination of the Government's obligation to contribute, or when such property is not being used for the work, the Operator shall not use it elsewhere without the written consent of the Government and without paying a reasonable rental to be fixed by the Government for its proportionate interest.

(c) Disposal of property.--Upon the completion of the work, termination of the Government's obligation to contribute to costs, or when the property is no longer needed for the work, the Operator shall promptly dispose of salable or salvageable property in which the Government has an interest for the joint account of the Government and the Operator, either by return to the vendor, sale to others, purchase by the Operator, or sale or transfer to the Government at a price at least as high as could be obtained from others, unless the Government in writing waives its interest in any such property. Without advance approval of the sales price by the Government, the Operator shall not sell at any price any item of property that cost more than \$500, and shall not sell at less than 25 percent of the purchase price any item of property that cost \$500 or less. The Government, in lieu of approving the sales price for any such item, may itself purchase the item at the best price which the Operator is able to obtain or offers. Property remaining upon any termination of the work shall be considered in groups or categories (such as drill steel, explosives, pipe, or rail), and if the original cost of the remaining unexpended portion of any such group or category is less than \$50, the Government waives its interest therein. If necessary to accomplish the disposal of any item, the Operator shall dismantle and sever it from the land, the cost thereof to be treated as a cost of the exploration.

(d) Default of the Operator re disposal.--If within 90 days after the completion of the work, termination of the Government's obligation to contribute to costs, or after the property is no longer needed for the work, the Operator has failed to sell or otherwise liquidate or dispose of any property in which the Government has an interest, the Government, at any time prior to final settlement under the contract, may:

(1) in writing extend the time within which the Operator must dispose of or liquidate the property;

(2) by written notice to the Operator, place upon such property what it determines to be a fair valuation thereof, not in excess of the cost less 1.66 percent per month from the date such property was purchased under this contract to the termination of said 90-day period; and such property shall thereupon be considered and accounted for as having been purchased by the Operator at the valuation so fixed by the Government; and

(3) enter and take possession of such property wherever it may be found, and remove and dispose of it for the joint account of the parties.

ARTICLE 9. Termination of the Government's obligations.--(a) If the Government determines that operations at any time have failed to achieve anticipated results and further work is not justified, the Government may give the Operator written notice thereof, and thereupon:

(1) the Government shall be free of all obligation to contribute to costs not then incurred other than such as may be allowable under the provisions of the contract as necessary and incidental to final accounting and reporting; and

(2) the Operator shall be free of all obligation to prosecute the work other than such as may be necessary and incidental to final accounting and reporting.

(b) If the Government determines that the Operator is in default under the terms of the contract, the Government may give the Operator written notice of such default with a specification of reasonable time within which the default must be cured; and if the Operator fails to cure such default as required, thereupon:

(1) the Government shall be relieved of all obligation to contribute to costs not incurred when the notice was given, other than such as may be allowable by the provisions of the contract as necessary and incidental to final accounting and reporting; and

(2) the Operator shall be free of all obligation to prosecute the work other than such as may be necessary and incidental to final accounting and reporting.

The Government may also avail itself of any other remedy the law may provide for breach of contract, including the right to rescind the contract and to demand repayment of all moneys contributed by the Government under the contract.

(c) The giving of any notice by the Government under the provisions of this Article 9 shall not affect the Government's rights as provided for in the contract with respect to royalty and liens to secure the payment thereof, and such rights shall be fully preserved.

(d) The determinations of the Government are subject to appeal under Article 13.

ARTICLE 10. Notices to be given by the Government may be delivered to the Operator, or may be sent by certified mail addressed to the Operator at his mailing address stated in this contract. If mailed, notices are deemed to have been delivered five days after the date of mailing.

ARTICLE 11. Officials not to benefit.--No member of or delegate to Congress or resident commissioner shall be admitted to any share or part of this contract or to any benefit that may arise therefrom; but this provision shall not be construed to extend to this contract if made with a corporation for its general benefit.

ARTICLE 12. Nondiscrimination in Employment. The provisions respecting nondiscrimination in employment which are required by section 301 of Executive Order 10925, dated March 6, 1961 as amended and supplemented are attached hereto as Exhibit B and are hereby incorporated in and made a part of this contract.

ARTICLE 13. Disputes.--Any dispute arising under this contract which is not disposed of by agreement shall be decided by the Director, U. S. Geological Survey, who shall reduce his decision to writing and mail or otherwise furnish a copy thereof to the Operator. The decision of the Director, U. S. Geological Survey, shall be final and conclusive unless, within 30 days from the date of receipt of such copy, the Operator mails or otherwise furnishes to the Director, U. S. Geological Survey, a written appeal addressed to the Secretary of the Interior. The decision of the Secretary or his duly authorized representative for the determination of such appeals shall be final and conclusive unless determined by a court of competent jurisdiction to have been fraudulent, or capricious, or arbitrary, or so grossly erroneous as necessarily to imply bad faith, or not supported by substantial evidence.

The term "Director, U. S. Geological Survey," as used herein includes his duly authorized representative.

ARTICLE 14. Work Hours Act of 1962 - Overtime Compensation.--This contract, to the extent that it is of a character specified in the Work Hours Act of 1962 (Public Law 87-581, 76 Stat. 357-360) and is not covered by the Walsh-Healey Public Contracts Act (41 U.S.C. 35-45), is subject to the following provisions and to all other provisions and exceptions of said Work Hours Act of 1962.

(a) Overtime requirements.--No Operator or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any laborer or mechanic to be employed on such work in excess of eight hours in any calendar day or in excess of forty hours in any workweek unless such laborer or mechanic receives compensation at a rate of not less than one and one-half times his basic rate of pay for all hours worked in excess of eight hours in any such calendar day or in excess of forty hours in any such workweek, as the case may be.

(b) Violations; liability for unpaid wages; liquidated damages.--In the event of any violation of the clause set forth in subparagraph (a) of this paragraph, the Operator and any subcontractor responsible therefor shall be liable to any affected employee for his unpaid wages. In addition, such Operator and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for

liquidated damages. Such liquidated damages shall be computed, with respect to each individual laborer or mechanic employed in violation of the clause set forth in subparagraph (a) of this paragraph, in the sum of \$10 for each calendar day on which such employee was required or permitted to work in excess of eight hours or in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in subparagraph (a) of this paragraph.

(c) Withholding for unpaid wages and liquidated damages.--The U. S. Geological Survey may withhold or cause to be withheld, from any moneys payable on account of work performed by the Operator or subcontractor, such sums as may administratively be determined to be necessary to satisfy any liabilities of such Operator or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in subparagraph (b) of this paragraph.

ARTICLE 15. Copeland (Anti-Kickback) Act--Nonrebate of wages.--The regulations of the Secretary of Labor applicable to contractors and subcontractors (29 CFR, Part 3), made pursuant to the Copeland Act, as amended (40 U. S. C. 276c) and to aid in the enforcement of the Anti-Kickback Act (18 U. S. C. 874) are made a part of this contract by reference. The Operator will comply with these regulations and any amendments or modifications thereof and will be responsible for the submission of affidavits required of independent contractors thereunder. The foregoing shall apply except as the Secretary of Labor may specifically provide for reasonable limitations, variations, tolerances, and exemptions.

ARTICLE 16. Changes and added provision.--

Executed in quintuplicate the day and year first above written.

THE UNITED STATES OF AMERICA

(Operator)

By _____

By _____

Title _____

I, _____, certify that I am the
(Name)

secretary of the corporation named as Operator herein; that

_____, who signed this contract on behalf of the Operator, was then
(Name)

of said corporation; that said contract was duly signed for
(Title)

and in behalf of said corporation by authority of its governing body, and is within the scope of its corporate powers.

EXPLORATION CONTRACT

ANNEX I

The land, including all rights thereto, referred to in Article 2 of the contract consists of nine (9) patented lode mining claims and two (2) unpatented lode mining claims in secs. 30 and 31,

, and sec. 25,

These claims are shown on Figure 1, entitled "Property", attached and made part hereof.

The patented lode mining claims are as follows:

<u>Claim Name</u>	<u>Survey No.</u>	<u>Patent No.</u>
Perry	678	46463
Union	678	46463
Crook	678	46463
Triangle	677	46464
Orie	446	36028
Roy	446	36028
Now or Never	446	36028
Poorman	446	36028
Gold Standard	446	36028

The unpatented lode mining claims were located by _____ and are recorded in the Office of the County Clerk, _____, as follows:

<u>Claim Name</u>	<u>Book</u>	<u>Page</u>
Gudrun Silver	4	283
Royal Silver	4	281

Interest in the two unpatented lode mining claims was conveyed on March 4, 1971, from _____ to _____.

The Operator is in possession of the patented lode mining claims under an Assignment of Mining lease dated March 7, 1971, between _____ and _____. This document assigned a Mining Lease and Option to Purchase agreement dated November 27, 1970, between _____, the owner and lessor, and _____, lessee.

Lien and Subordination Agreements executed by the owner of the patented lode mining claims are attached and made a part hereof.

EXPLORATION CONTRACT

EXHIBIT A

The purpose of the project is to explore by diamond core drilling from a prepared surface site for silver-bearing ore bodies in and along a shear zone cutting volcanic rocks of the Clarno Formation of Eocene age.

GENERAL PROVISIONS

No drilling shall be done within 100 feet of the exterior boundaries of the land outlined on Figure 1.

Drill holes shall be cased through overburden and completed not less than standard BX (nominal diameter 1-5/8 inches) core size or equivalent wire line size equipment. The Government will not contribute to the cost of casing left in a hole at the Operator's request or to the costs incurred for incomplete drill holes.

Facilities shall be provided for recovering drill sludge, and such sludge shall be retained when drilling in significantly mineralized rock.

All drill core shall be logged and significantly mineralized core shall be split and one split assayed for gold and silver. Whenever core recovery is less than 60 percent, a split of the corresponding retained sludge shall be assayed separately. The remaining core shall be stored in proper sequence with the unsampled core, and the remaining sludge shall be stored in suitable containers properly identified as to hole number and depth.

True copies of assay certificates, copies of drill logs, and maps and sketches showing the work completed during the reporting period, the location, width, and assay value of all samples assayed and the geological formations and structures traversed by the drill holes shall be furnished monthly to the Government.

Stored samples shall be made available for Government inspection and possible use, and may be disposed of only with prior Government approval.

The Operator shall provide such supervision, labor, and technical services as may be required to perform the work in a satisfactory manner.

The location, direction, and extent of each work item shall be subject to Government approval.

The work shall be divided into two stages. The Operator shall complete all of Stage I and as much of Stage II as is authorized in advance by the prior written approval of the Government. Approval of Stage II work shall depend upon the Government's examination of the results obtained in Stage I.

DESCRIPTION OF THE WORK

STAGE I

The work shall consist of diamond drilling three inclined core holes downward from a single surface site prepared in advance at the Operator's expense.

The bearing, inclination, and depth of the three holes shall be as follows:

<u>Hole No.</u>	<u>Inclination</u>	<u>Bearing</u>	<u>Approximate length^{1/} (feet)</u>
1	-40°	S. 40° W.	350
2	-40°	S. 10°W	350
3	-40°	S. 70° W.	<u>350</u>
Total			1,050

1/ No hole shall be drilled more than 20 feet beyond a vein zone correlative with the Roy vein.

STAGE II

The work, if approved, shall consist of diamond drilling two additional inclined core holes downward from the same surface site as Stage I.

The bearing, inclination, and depth of the two holes shall be as follows:

<u>Hole No.</u>	<u>Inclination</u>	<u>Bearing</u>	<u>Approximate length^{1/} (feet)</u>
4	-75°	S. 50° W	500
5	-75°	S. 25° W	<u>500</u>
Total			1,000

1/ See footnote under Stage I.

The approximate location of the drill site and the five drill holes is shown on Figure 2 entitled "Proposed diamond drill holes, attached and made part hereof.

30 sample sacks at \$0.50/sack	\$ 15.00	
Sludge catching and sampling supplies	50.00	
Cement, drill muds, additives		
12 sacks materials listed, or equivalent	100.00	
Cement at \$8.00/100-lb. sack		
Drill mud at \$2.50/50-lb. sack		
Additives,		
Caustic soda at \$20.00/50-lb. sack		
Cellex at \$65.00/50-lb. sack		

Total Category (3)		\$ 280.00

Category (7) Miscellaneous

None except:

Office and accounting expense, 2 months at \$50.00/month	\$ 100.00	
Assaying for gold and silver, 30 samples at \$5.00/sample	<u>150.00</u>	
Total Category (7)		\$ 250.00
Total Estimated Cost, Stage I		\$ 14,240.00
Government Participation at 75%		\$10,680.00

STAGE II

Actual Costs

Category (1) Independent Contracts

Diamond drilling, including overburden, 1,000 feet		\$ 8,160.00		
Depth	Price Per Foot			
(feet)	<u>Ob.</u>	<u>NC</u>	<u>NX</u>	<u>BX</u>
0-500	\$10.50	\$8.75	\$7.75	\$7.50
500-1,000			8.25	8.00
Cementing, 30 hours at \$20.00/hour				600.00
Reaming or drilling cement, 200 feet at \$4.00/foot				800.00

Placing and pulling casing, 50 hours at \$16.00/hour	\$ 800.00
Lost casing in completed holes, 200 feet at \$2.00/foot	400.00
Water truck rental, including driver, 2 months at \$350.00/month	<u>700.00</u>
Total Category (1)	\$11,460.00
Category (2) <u>Personal Services</u>	
<u>None except:</u>	
1 Supervisory-Engineer-Geologist 2 months at \$1,000.00/month	\$2,000.00
Total Category (2)	\$ 2,000.00
Category (3) <u>Operating Materials and Supplies</u>	
<u>None except:</u>	
100 core boxes at \$1.15/box	115.00
20 sample sacks at \$0.50/sack	10.00
Sludge catching and sampling supplies	50.00
Cement, drill muds, additives, 15 sacks materials listed, or equivalents	125.00
Cement at \$8.00/100-lb. sack	
Drill mud at \$2.50/50-lb. sack	
Additives, Caustic soda at \$20.00/50-lb. sack	
Cellex at \$65.00/50-lb. sack	
Total Category (3)	<u>\$ 300.00</u>
Category (7) <u>Miscellaneous</u>	
<u>None except:</u>	
Office and accounting expense, 2 months at \$50.00/month	100.00
Assaying for gold and silver, 20 samples at \$5.00/sample	<u>100.00</u>
Total Category (7)	\$ 200.00

Total Estimated Cost of Stage II	\$13,960.00
Government Participation at 75%	\$10,470.00

S U M M A R Y

Total Estimated Cost of Stage I	\$14,240.00
Government Participation at 75%	\$10,680.00
Total Estimated Cost of Stage II	\$13,960.00
Government Participation at 75%	\$10,470.00
Total Estimated Cost of the Project	\$28,200.00
Government Participation at 75%	\$21,150.00

EXPLORATION CONTRACT
(Short Form)

Docket Commodity Contract No. County State

ONE

It is agreed May 1, 1971, between the United States of America, acting through the
(Date)
Department of the Interior, U. S. Geological Survey, hereinafter called the "Government," and

whose mailing address is _____,
hereinafter called the "Operator," as follows:

ARTICLE I. Authority and scope.--(a) This contract, entered into under the authority of Public Law 701, 85th Cong., 2d sess. (72 Stat. 700; 30 U.S.C. § 641 - 646), consists of this form, the attached Annex I (land description), Exhibit A (work and costs), and the maps and documents listed. The work is a search for new or unexplored deposits of the commodity designated above. The Operator

shall begin the work on or before June 15, 1971, and, subject to the provisions of Article 7
(Date)

and Exhibit A, shall complete the work within 15 months from the date of the contract.

(b) The description of the work and the fixed cost for each unit of work to be performed (per foot of drilling, per foot of drifting, per hour of operations, etc.) are hereby agreed upon as specified in Exhibit A. The estimated total cost of the work is \$ 28,500.00. The Government will contribute ~~50~~⁷⁵ percent of the total fixed unit costs of the work performed, not in excess of \$ 21,375.00 in accordance with the provisions of Articles 4 and 5.

(c) Interest computation.--Simple interest at the rate of 9½ percent shall accrue from the dates Federal funds are made available until the period specified for payment of royalty expires, or until the amount of Federal funds contributed is fully repaid with interest.

(d) The Operator shall not transfer or assign this contract or any right or obligation thereunder without the written consent of the Government.

ARTICLE 2. Operator's rights in land.--(a) The Operator represents and undertakes that Annex I correctly describes the land which is the subject of this contract and the nature of the Operator's right of property and possession therein (whether as owner, lessee, or otherwise), and that such right, title, or interest is subject only to the following claims, liens, or encumbrances:

(b) The Subordination Agreement of the holder of any claim, lien, or encumbrance listed above and (if the Operator does not hold the legal title) the Lien Agreement of any holder of the legal title of the land (lessor, seller, optionor, etc.) are attached as follows:

(c) The Operator shall preserve and maintain his right, title, or interest in the land and his right to the possession thereof for the purposes of this contract, and shall devote the land and all existing improvements, facilities, buildings, installations, and appurtenances to the purposes of this contract. The Operator shall neither transfer, convey, nor surrender the land nor any right, title, or interest therein, nor permit nor suffer any claim, lien, or encumbrance thereon, without expressly referring to and providing in the instrument of conveyance, lien, or encumbrance for the preservation of the Government's right to a royalty on production and liens for the payment thereof. Two true copies of such instrument shall be furnished to the Government. If the Government's rights to royalty as provided in Article 6 have been terminated, the provisions of this paragraph (c) shall become inapplicable.

ARTICLE 3. Performance of the work.--(a) Operator's responsibility.--The work shall be performed diligently, efficiently, in a workmanlike manner in accordance with good mining standards, and in compliance with State laws governing health, safety, and liability insurance covering employment. The Operator shall provide suitable and adequate equipment, facilities, materials, supplies, and labor to complete the work as specified in Article 1(a).

(b) **Government may inspect.--**The Operator shall consult with and inform the Government on all phases of the work as it progresses. The Government may enter at all reasonable times to inspect the work under the contract and production operations during the period that royalty is payable to the Government. The Operator shall provide the Government with all reasonable means of access for such inspections.

ARTICLE 4. Contribution by the Government.--The Government will make its contribution on the basis of the monthly vouchers referred to in Article 5(b), but all payments by the Government are provisional only, subject to audit. Until the account between the Operator and the Government is finally audited and settled and the Operator's final report has been received, the Government may withhold such sums as are necessary to protect its interests. To the extent that amounts in excess of fixed unit costs or in excess of the estimated total cost may be necessary for the performance of the work, the Operator shall incur and pay such amounts for his own account without contribution by the Government. The Government will not contribute to the cost of any work performed prior to the date of this contract. The Government may make payments for the account of the Operator directly to independent contractors and suppliers rather than to the Operator.

ARTICLE 5. Reports, accounts, audits.--(a) Operator's records.--The Operator shall keep suitable records and accounts of the units of work performed and of any production in which the Government may have an interest; and shall preserve those with respect to work performed for at least three years after final payment by the Government, and those with respect to production for at least three years after any obligation to pay royalties to the Government has terminated. The Government may inspect and audit said records and accounts at any time, either by itself or by a certified public accountant. The Comptroller General of the United States or his representative, until the expiration of said three-year periods, shall have access to and the right to examine all pertinent books, documents, papers, and records of the Operator.

(b) **Monthly reports.--**The Operator shall provide the Government with four copies of monthly reports in three sections as follows:

- (1) Operator's Monthly Voucher claiming costs for work performed;
- (2) Operator's Progress Report showing the number of units of the various types of work performed;

and

- (3) a narrative report of the work performed during the reporting period, including adequate engineering-geological maps or sketches, drill hole logs and locations, and assay reports on samples taken concurrently with advance in mineralized ground.

(Forms for reporting under (1) and (2) above will be provided by the Government.)

(c) **Final report.--**Upon completion of the work or termination of the Government's obligation to contribute to costs, the Operator shall furnish the Government with three copies of a final report (in addition to the final monthly report). This final report shall include a geological and engineering evaluation of the results of the work performed under the contract with an estimate of the ore reserves resulting from such work, complete assay data, adequate geological and engineering maps or sketches, and a summary of the work performed and the unit costs thereof.

(d) **Report of sales.--**The Operator shall provide the Government with suitable accounting and documentary evidence covering all production to which the Government's royalty relates, such as two copies of smelter or concentrator settlement sheets and certified accounts of production and sale or other disposition of production.

(e) **Compliance with requirements.--**If the Government determines that any of the Operator's reports, records, or accounts are insufficient or incomplete, or if the Operator fails to make them, the Government may procure the preparation or completion of same with suitable attachments as an expense of the work to which the Operator shall contribute. The Government may withhold approval and payment of any vouchers relating to insufficient or incomplete reports, records, or accounts.

ARTICLE 6. Repayment by Operator.--(a) Certification.--If the Government considers that mineral or metal production from the land covered by the contract may be possible as a result of the exploration work, it shall so certify in writing to the Operator at any time not later than six months after a sufficient final report and final accounting (see Article 5) have been furnished.

(b) Royalty on production.--The Operator, whether or not the producer (for example, if the Operator either transfers or does not retain his interest in the land), shall pay to the Government a royalty on all minerals and metals mined or produced from the land as follows:

(1) irrespective of any certification of possible production--from the date of the contract until the lapse of the time within which the Government may issue such certification or until the total net amount contributed by the Government is fully repaid with interest, whichever occurs first; or

(2) if the Government issues a certification of possible production--for a period of ten years from the date of the contract or until the total net amount contributed by the Government is fully repaid with interest, whichever occurs first.

(c) Payment of royalty.--(1) The Government's royalty shall be five percent of the gross proceeds (including any bonuses, premiums, allowances, or other benefits) from the production sold, in the form sold (ore, concentrate, metal, or equivalent), at the point of delivery (the f.o.b. point); except, that charges of the buyer arising in the regular course of business and shown as deductions on the buyer's settlement sheets (such as treatment processes performed by the buyer, sampling and assaying to determine the value of the production sold, and freight payable by the buyer to a carrier (not the Operator or producer)), shall be allowed as deductions in arriving at the "gross proceeds" as that term is used herein. No costs of the Operator or producer are deductible in arriving at the "gross proceeds" as that term is here used.

The term "treatment processes" means those processes (such as milling, concentrating, smelting, refining, or equivalent, but excluding fabricating or manufacturing) applied to the crude ore or other production after it is extracted from the ground to put it into a commercially marketable form.

(2) The Government's royalty shall be computed and paid currently upon each lot sold, held, or used in integrated operations, as the case may be.

(d) Unsold production.--If any production (ore, concentrate, metal, or equivalent), after the lapse of six months from the date the ore was extracted from the ground, remains neither sold nor used in integrated manufacturing or fabricating operations (for instance if it is stockpiled), the Government, at its option, as long as it so remains, may require the computation and payment of its royalty on the value of such production in the form (ore, concentrate, metal, or equivalent) it is in when the Government elects to require computation and payment. If any production is used in integrated manufacturing or fabricating operations before the Government makes its election, the Government's royalty on such production shall be computed on the value thereof in the form in which and at the time it is so used. "Value" as here used means what is or would be gross income from mining operations for percentage depletion purposes in Federal income tax determination, or the market value, whichever is greater.

(e) Lien for payment.--To secure the payment of royalty (see Article 6(b)), the Operator hereby grants to the Government a lien upon his interest in the land and upon any production of minerals and metals therefrom until the royalty claim is extinguished by lapse of time or is fully paid.

(f) Notice to purchasers.--The Operator or producer shall give notice of the Government's claim for royalty to any purchaser of the production, and shall authorize and direct such purchaser to pay the royalty directly to the Government and to furnish the Government with copies of the settlement sheets. If the records of any production and sales or other disposition of production, whether the production is by the Operator or by others, are not made available to the Government, the amount of the royalty may be estimated by the Government, and this estimate shall be final and binding upon the Operator or producer.

(g) No obligation to produce.--Nothing in this contract shall be construed as imposing any obligation on the Operator or the Operator's successor in interest to engage in any production operations.

(h) Government not obligated to buy.--Nothing in this contract shall be construed as imposing any obligation on the Government to purchase any minerals and metals mined or produced from the land.

ARTICLE 7. Termination of the Government's Obligations.--(a) If the Government determines that operations at any time have failed to achieve anticipated results and further work is not justified, the Government may give the Operator written notice thereof, and thereupon:

(1) the Government shall be free of all obligation to pay on account of units of work not then performed; and

(2) the Operator shall be free of all obligation to prosecute the work other than such as may be necessary and incidental to final accounting and reporting.

(b) If the Government determines that the Operator is in default under the terms of the contract, the Government may give the Operator written notice of such default with a specification of reasonable time within which the default must be cured; and if the Operator fails to cure such default as required, thereupon:

(1) the Government shall be relieved of all obligation to pay on account of units of work not performed when the notice was given, and

(2) the Operator shall be free of all obligation to prosecute the work other than such as may be necessary and incidental to final accounting and reporting.

The Government may also avail itself of any other remedy the law may provide for breach of contract, including the right to rescind the contract and to demand repayment of all moneys contributed by the Government under the contract.

(c) The giving of any notice by the Government under the provisions of this Article 7 shall not affect the Government's rights as provided for in the contract with respect to royalty and liens to secure the payment thereof, and such rights shall be fully preserved.

(d) The determinations of the Government are subject to appeal under Article 11.

ARTICLE 8. Notices to be given by the Government may be delivered to the Operator or may be sent by certified mail addressed to the Operator at his mailing address stated in this contract. If mailed, notices are deemed to have been delivered five days after the date of mailing.

ARTICLE 9. Officials not to benefit.--No member of or delegate to Congress or resident commissioner shall be admitted to any share or part of this contract or to any benefit that may arise therefrom; but this provision shall not be construed to extend to this contract if made with a corporation for its general benefit.

ARTICLE 10. Nondiscrimination in Employment.--The provisions respecting nondiscrimination in employment which are required by section 301 of Executive Order 10925, dated March 6, 1961, as amended and supplemented, are attached hereto as Exhibit B and are hereby incorporated in and made a part of this contract.

ARTICLE 11. Disputes.--Any dispute arising under this contract which is not disposed of by agreement shall be decided by the Director, U. S. Geological Survey, who shall reduce his decision to writing and mail or otherwise furnish a copy thereof to the Operator. The decision of the Director, U. S. Geological Survey, shall be final and conclusive unless, within 30 days from the date of receipt of such copy, the Operator mails or otherwise furnishes to the Director, U. S. Geological Survey, a written appeal addressed to the Secretary of the Interior. The decision of the Secretary or his duly authorized representative for the determination of such appeals shall be final and conclusive unless determined by a court of competent jurisdiction to have been fraudulent, or capricious or arbitrary, or so grossly erroneous as necessarily to imply bad faith, or not supported by substantial evidence.

The term "Director, U. S. Geological Survey," as used herein includes his duly authorized representative.

ARTICLE 12. Work Hours Act of 1962 - Overtime Compensation.--This contract, to the extent that it is of a character specified in the Work Hours Act of 1962 (Public Law 87-581, 76 Stat. 357-360) and is not covered by the Walsh-Healey Public Contracts Act (41 U.S.C. 35-45), is subject to the following provisions and to all other provisions and exceptions of said Work Hours Act of 1962.

(a) **Overtime requirements.**--No Operator or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any laborer or mechanic to be employed on such work in excess of eight hours in any calendar day or in excess of forty hours in any workweek unless such laborer or mechanic receives compensation at a rate of not less than one and one-half times his basic rate of pay for all hours worked in excess of eight hours in any such calendar day or in excess of forty hours in any such workweek, as the case may be.

(b) **Violations; liability for unpaid wages; liquidated damages.**--In the event of any violation of the clause set forth in subparagraph (a) of this paragraph, the Operator and any subcontractor responsible therefor shall be liable to any affected employee for his unpaid wages. In addition, such Operator and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed, with respect to each individual laborer or mechanic employed in violation of the clause set forth in subparagraph (a) of this paragraph, in the sum of \$10 for each calendar day on which such employee was required or permitted to work in excess of eight hours or in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in subparagraph (a) of this paragraph.

(c) **Withholding for unpaid wages and liquidated damages.**--The U. S. Geological Survey may withhold or cause to be withheld, from any moneys payable on account of work performed by the Operator or subcontractor, such sums as may administratively be determined to be necessary to satisfy any liabilities of such Operator or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in subparagraph (b) of this paragraph.

ARTICLE 13. Copeland (Anti-Kickback) Act--Nonrebate of wages.--The regulations of the Secretary of Labor applicable to contractors and subcontractors (29 CFR, Part 3), made pursuant to the Copeland Act, as amended (40 U. S. C. 276c) and to aid in the enforcement of the Anti-Kickback Act (18 U. S. C. 874) are made a part of this contract by reference. The Operator will comply with these regulations and any amendments or modifications thereof and will be responsible for the submission of affidavits required of independent contractors thereunder. The foregoing shall apply except as the Secretary of Labor may specifically provide for reasonable limitations, variations, tolerances, and exemptions.

ARTICLE 14. Changes and added provisions.--

Executed in quintuplicate the day and year first above written.

THE UNITED STATES OF AMERICA

(Operator)

By _____

By _____

Title _____

I, _____, certify that I am the
(Name)

secretary of the corporation named as Operator herein; that

_____, who signed this contract on behalf of the Operator, was then
(Name)

of said corporation; that said contract was duly signed for
(Title)

and in behalf of said corporation by authority of its governing body, and is within the scope of its
corporate powers.

[CORPORATE
SEAL]

EXPLORATION CONTRACT

EXHIBIT A

The purpose of this project is to explore for gold ore by drifting and crosscutting in Carboniferous limestone near its contact with intrusive syenite porphyry and rhyolite porphyry on the 4 and 6 levels of the mine.

GENERAL PROVISIONS

The Operator shall provide such supervision, labor, and technical services as may be required to perform the work in a satisfactory manner.

The location, direction, and extent of each work item shall be subject to Government approval.

No work under this contract shall be performed within 100 feet of the outer boundary of the project area.

All drifts and crosscuts shall be not less than 5 by 7 feet in cross section and shall be adequately supported by timber where necessary using standard 8-by 8-inch drift sets or equivalent round timber.

Mine rails shall be not less than 16-pound size, air lines not less than 2-inch diameter, water lines not less than 1-inch diameter, and vent lines not less than 10-inch diameter.

All significantly mineralized areas traversed by the exploration work shall be sampled. A representative bulk sample shall be collected from each round broken in mineralized rock. Channel samples shall be cut normal to the trends of the deposits at intervals of not more than 5 feet.

All samples, from whatever source, shall be split as necessary and one split assayed for gold and silver. The Operator shall store one split of each sample in a suitable container properly identified as to source and location for Government inspection and possible use. With prior Government approval, the Operator may dispose of the stored samples.

True copies of assay certificates, and maps or sketches showing the work completed during the reporting period, the location, width, and assay value of all samples taken, and the geological formations and structures traversed by the drifts and crosscuts shall be furnished monthly to the Government.

The Operator shall provide such supervision, labor, and technical services as may be required to complete the work in a satisfactory manner.

The Operator shall perform all work in such a manner as to maintain the quality of the environment in the vicinity of the project. Waste mineral materials generated in the process of the exploration work shall be stored in a safe manner so as not to degrade the existing quality of adjacent land, air, and streams.

DESCRIPTION OF THE WORK

The proposed work is shown on Figure 2 - entitled "Proposed Exploration, " attached hereto and made part hereof.

Starting approximately 30 feet northwesterly from the Shaft on Level 4, drift north-northeasterly to the contact between the limestone and the rhyolite porphyry. It is anticipated that the work will traverse a zone of brecciated limestone and porphyry. Maximum length of drift is 80 feet.

Starting approximately 75 feet due south from the Shaft on the 6 level, drift southeasterly along the limestone-syenite porphyry contact for 300 feet to explore for the downward extensions of the Bonanza and Glory Hole veins.

ESTIMATED COST OF THE WORK

Fixed Unit Cost 1/

Drifting and crosscutting 380 feet at \$75/ft.	\$28,500.00
Government participation at 75 percent	21,375.00

1/ The unit cost includes all costs of labor, materials, equipment purchased, supervision, insurance, assays, mileage, and office expense. The Government retains no equity in any of the equipment or materials used.

northern mineral
exploration assistance
program

Yukon and Northwest Territories

OIL AND MINERAL DIVISION
DEVELOPMENT BRANCH
DEPARTMENT OF INDIAN AFFAIRS AND NORTHERN DEVELOPMENT

Northern Mineral Exploration Assistance Program

I. Introduction

The Northern Mineral Exploration Assistance Program is designed to provide financial assistance toward the cost of mineral and oil and gas exploration activity in the Yukon and Northwest Territories.

The Program is governed by the Northern Mineral Exploration Assistance Regulations, P.C. 1966-1641, as amended by P.C. 1967-2223, which should be read in conjunction with this brochure.

II. Objective

The purpose of the Program is to stimulate greater interest in the mineral resources of Northern Canada and to intensify the pace of northern mineral exploration activity - by underwriting the higher cost of northern operations, thereby reducing the risk capital investment inherent in northern mineral exploration operations.

III. Nature of Assistance

Financial assistance is available up to a maximum of 40% of an applicant's approved exploration program expenditures.

Payment in an interim amount of three-quarters of the total grant calculated to be owing the applicant, is made at the conclusion of the approved exploration program. The remaining portion is paid following a confirming audit of the claimed expenditures by representatives of the Audit Services Branch. The audit is conducted at no cost to the applicant.

Before payment may be made, the successful applicant is required to submit reports on the work completed and a statement under oath of the expenditures incurred in doing the work approved for assistance. Section 7 of the Regulations further details the material that must be submitted with a claim for assistance.

Interim payments may be made in cases where the exploration program is of long duration. Arrangements for interim payments must be made at the time of application. Normally such payments are considered at the conclusion of logical stages or phases of an applicant's program, and are made following receipt and acceptance of the same sort of material required to process an end-of-program payment.

IV. Eligibility

Assistance is available to companies incorporated in Canada and to Canadian citizens, who propose to undertake exploration for minerals and/or gas and oil in the Yukon or Northwest Territories.

A group of companies, individuals or a combination of both may qualify but in so doing each must establish eligibility in its or his own right. Failure to do so would disqualify the group as a whole. A group application must be accompanied by an agreement between the members of the group in which one of its members has been appointed to act on behalf of the group, as set out in subsection (3) of section 3 of the Regulations.

Corporate applicants fall into two broad categories: a) those that are of the type described in paragraph (a) or (b) of subsection (3b) of section 83A of the Income Tax Act, and b) those that are not. (In establishing which category applies to a corporate applicant, it is immaterial that the corporation is one which is in a position to take advantage of the benefits offered by the quoted section of the Income Tax Act, since reference to the Act in these Regulations is for descriptive purposes only).

A so-called 83A type company must not have in excess of 15% of its issued and outstanding voting shares owned in the aggregate by one or more other corporations similarly described in the quoted section of the Income Tax Act. Moreover, it must satisfy the additional requirements of paragraph (c) of subsection (2) of section 3 of the Regulations in order to qualify for assistance.

The non 83A corporation primarily has to ensure the availability of its shares to the Canadian market. The precise requirements of eligibility of this type of corporation for assistance are set out in paragraph (b) of subsection (2) of section 3 of the Regulations.

V. Conditions of Assistance

Applications must be submitted in the detail required by section 4 of the Regulations. Applications must include the material set out on the cover sheet of instructions attached to the application forms and be submitted well in advance of the proposed starting date of the exploration program. No expenditures incurred prior to the date of the applicant's application will be considered eligible for a grant.

The exploratory work, as defined in paragraph (d) of section 2 of the Regulations must be undertaken on holdings, as defined in paragraph (g) of the quoted section of the Regulations. The applicant must produce evidence with his application that he has a lease, option or owns the holdings on which the program is proposed. No assistance is extended toward the capital cost of acquiring buildings or equipment associated with an approved exploration program. Depreciation is allowed on these items at the rate of 20 per cent per year, pro-rated over the period of their use.

Administrative expenses, such as head office space rental, stenographic or clerical salaries, telephone charges and any other items of this nature not directly associated with the operational costs of the exploration program, are not considered eligible for assistance if they are in excess of 10% of the direct program expenditures. Where an applicant has contracted out the complete exploration program none of his administration expenses will be allowed for assistance.

The applicant is required to state the period of his exploration program, giving estimated starting and completion dates. Expenditures incurred during this period, once approved by the Minister, are eligible for assistance if directly related to the approved exploration program. Expenditures incurred prior to or following the stated and approved period of the exploration program are not eligible for assistance unless these can be related to the exploration program as either advance or belated payments for goods or services consumed during the period of the exploration program.

All approved exploration programs must be inspected on-the-ground by the Resident Mining Engineer or his appointee in the territory in which the program is conducted. Responsibility for making these arrangements rests with the applicant following advice from the Department.

VI. Repayment

The Regulations require repayment of the assistance granted to an exploration program, if it results in the discovery of an economic orebody and the commencement of production for gain on the property on which the program was conducted. When the Director of the Development Branch has determined that production for gain has started on the holdings listed in the applicant's application, the applicant will be required to repay with interest the total amount of money advanced to him by either of three methods, or by any combination of these. He may choose to repay the amount advanced in instalments, in one cash payment or by issuing to Her Majesty fully paid common shares of the Company. Section 13 of the Regulations explains in more detail the various methods of repayment.

There is provision in the Regulations for the Minister to waive the repayment of a loan should production for gain cease. The operative sections of the Regulations in this regard are subsection (6) of section 13 and sections 14 and 15.

The Regulations also provide for the repayment of any amount or amounts advanced to an applicant if he does not adhere to any of the conditions or undertakings to which he has subscribed in his application. The undertakings and penalty for their violation are set out in section 11 of the Regulations.

APPROPRIATION ACTS.

Northern Mineral Exploration Assistance Regulations.

P.C. 1967-2223

AT THE GOVERNMENT HOUSE AT OTTAWA

WEDNESDAY, the 24th day of August, 1966.

PRESENT:

HIS EXCELLENCY THE GOVERNOR GENERAL IN COUNCIL.

His Excellency the Governor General in Council, on the recommendation of the Minister of Northern Affairs and National Resources, pursuant to any enactment of the Parliament of Canada for defraying the several charges and expenses of the Public Service from and after the First day of April, 1966, that provides for payments in respect of the Northern Mineral Grants Program, is pleased hereby to approve the annexed Regulations respecting financial assistance in the exploration for oil, natural gas and minerals in Northern Canada.

REGULATIONS RESPECTING FINANCIAL ASSISTANCE IN THE EXPLORATION FOR OIL, NATURAL GAS AND MINERALS IN NORTHERN CANADA

Short title.

1. These Regulations may be cited as the *Northern Mineral Exploration Assistance Regulations*.

Interpretation.

2. In these Regulations,

- (a) "applicant" means a person or group of persons whose application for a grant has been received by the Minister;
- (b) "application" means an application for a grant;
- (c) "Canadian securities dealer" means a person who holds, Reg. & New P.C. 1967-2223 30/11/67 under a law of a province relating to trading in securities, a subsisting and unsuspended licence or registration that entitles him to trade in the shares of companies;
- (ca) "Director" means the Director, Resource and Economic Reg. & New P.C. 1967-2223 30/11/67 Development, Department of Indian Affairs and Northern Development;
- (d) "exploratory work" means surface examinations, aerial mapping, surveying, bulldozing, geological, geophysical and geochemical examinations and any other investigations relating to the subsurface geology, and includes
 - (i) in relation to exploration for oil and gas, the drilling of an exploratory test well,
 - (ii) in relation to exploration for minerals, the drilling of diamond drill holes or equivalent holes in a number satisfactory to the Minister, and
 - (iii) all works necessarily undertaken in connection with any operation specified in this paragraph, including the construction and maintenance of those facilities necessarily connected therewith and the building and maintenance of airstrips and roads required for the supply of or access to exploratory operations;
- (e) "gas" means natural gas;
- (f) "grant" means a grant authorized by the Minister pursuant to these Regulations;
- (g) "holdings" means
 - (i) claims and grants of claims within the meaning of the *Yukon Placer Mining Act*;
 - (ii) mineral claims or locations and leases thereof within the meaning of the *Yukon Quartz Mining Act*,
 - (iii) mining claims or claims, leases thereof and permits or prospecting permits within the meaning of the *Canada Mining Regulations*,
 - (iv) oil and gas leases and permits within the meaning of the *Canada Oil and Gas Land Regulations*,
 - (v) locations and leases thereof and permits within the meaning of the *Territorial Coal Regulations*, and
 - (vi) leases issued pursuant to the *Territorial Driveway Regulations*;
- (h) "minerals" means metals occurring in their natural state, ores of metals, coal and other naturally occurring substances capable of being mined, other than oil, gas and substances ordinarily obtained from a quarry;
- (i) "Minister" means the Minister of Indian Affairs and Northern Development;
- (j) "Northern Canada" means the part of Canada described in the Schedule;
- (k) "oil" means
 - (i) crude petroleum and other hydrocarbons regardless of gravity that are produced at a well head in liquid form by ordinary production methods,
 - (ii) any hydrocarbons except coal and gas, that may be extracted or recovered from surface or subsurface

deposits of oil sand, bitumen, bituminous sand, oil shale or other deposits, and

- (iii) any other hydrocarbons except coal and gas;
- (l) "program expenditure" means an amount expended in carrying out a program of exploratory work or a stage thereof;
- (m) "recipient" means an applicant whose application has been approved by the Minister pursuant to paragraph (a) of subsection (1) of section 5, and
- (n) "year" means a twelve month period ending on the thirty-first day of March.

Grants for Exploratory Work in Northern Canada

3. (1) Upon the application therefor to the Minister by one or more persons described in subsection (2) who intend to do exploratory work on holdings in Northern Canada, the Minister may, subject to these Regulations, authorize the payment to such person or persons of a grant in respect of the program expenditure for that exploratory work.

- (2) The persons referred to in subsection (1) are
 - (a) any individual who notifies the Minister that he is
 - (i) a Canadian citizen not less than 21 years of age, and

(ii) entitled by reason of beneficial ownership or lease or option agreement to enter on the holdings in respect of which the application is made and conduct thereon a program of exploratory work;

- (b) any corporation incorporated in Canada, other than a corporation described in paragraph (a) or (b) of subsection (3b) of section 83a of the *Income Tax Act*, that is either
 - (i) a private corporation whose issued and outstanding shares are beneficially owned
 - (A) by Canadian citizens,
 - (B) by one or more corporations described in subparagraph (ii), or
 - (C) partly by Canadian citizens and partly by one or more public corporations described in subparagraph (iii),

in a number that causes the total votes of the shares so owned to be not less than 50% of the total votes that could, under the voting rights attached to all the shares of the private corporation issued and outstanding, be voted by the holders thereof,

- (ii) a public corporation whose common shares are listed on a Canadian stock exchange or are offered for sale in Canada to the public through a Canadian securities dealer, or
- (iii) a corporation whose issued and outstanding shares are beneficially owned by one or more public corporations incorporated in Canada (whose shares are listed on a Canadian stock exchange or are offered for sale in Canada to the public through a Canadian securities dealer) in a number that causes the total votes of the shares so owned to be not less than 50% of the total votes that could, under the voting rights attached to all the shares of the corporation issued and outstanding, be voted by the holders thereof; and

- (c) any corporation incorporated in Canada and described in paragraph (a) or (b) of subsection (3b) of section 83a of the *Income Tax Act*

Reg. & New P.C. 1967-2223 30/11/67

Reg. & New P.C. 1967-2223 30/11/67

Reg. & New P.C. 1967-2223 30/11/67

- (i) that satisfies the Minister that, until the program of exploratory work in respect of which the application is made has been completed or discontinued, substantially all of its expenditures for exploratory work will, unless the Minister otherwise agrees, be made for exploratory work in Northern Canada,
- (ii) whose issued and outstanding shares are not beneficially owned by one or more other corporations described in the said paragraph (a) or (b) of subsection (3b) of section 83a of the *Income Tax Act* in any number that would cause the total votes of the shares so owned to be in excess of 15% of the total votes that could, under the voting rights attached to all the shares of the corporation issued and outstanding, be voted by the holders thereof, and

- (c) any corporation incorporated in Canada and described in paragraph (a) or (b) of subsection (3b) of section 83a of the *Income Tax Act*

- (i) that satisfies the Minister that, until the program of exploratory work in respect of which the application is made has been completed or discontinued, substantially all of its expenditures for exploratory work will, unless the Minister otherwise agrees, be made for exploratory work in Northern Canada,
- (ii) whose issued and outstanding shares are not beneficially owned by one or more other corporations described in the said paragraph (a) or (b) of subsection (3b) of section 83a of the *Income Tax Act* in any number that would cause the total votes of the shares so owned to be in excess of 15% of the total votes that could, under the voting rights attached to all the shares of the corporation issued and outstanding, be voted by the holders thereof, and
- (iii) that is a corporation described in subparagraph (i), (ii) or (iii) of paragraph (b).

130E/1/705

DEPARTMENT OF TRADE AND INDUSTRY

FINANCIAL ASSISTANCE FOR MINERAL EXPLORATION IN GREAT BRITAIN

A GUIDE FOR INDUSTRY

GENERAL

1 These notes describe a scheme of financial assistance for mineral exploration operated by the Department of Trade and Industry under the Mineral Exploration and Investment Grants Act 1972. In order to promote the economic development of our mineral resources, and subject to certain limits prescribed in the Act, the Department is given discretion to contribute 35% of qualifying expenditure incurred in exploring for and evaluating for commercial purposes mineral deposits in Great Britain. Under present arrangements the minerals included in the scheme are the ores of non-ferrous metals; fluorspar, barium minerals and potash. Assistance will be given only to programmes which have been submitted in advance and the Department may refuse to consider under the scheme any programme which in its view does not merit assistance. Where exploration leads to the extraction of mineral deposits in commercial quantities the financial assistance received, plus interest, will be repayable to the Government. A guarantee of or security for repayment may be required by the Department.

ELIGIBLE APPLICANTS

2 Financial assistance may be paid to any corporate body or company incorporated in the United Kingdom. Overseas companies, partnerships, joint ventures or individuals are welcome to apply for assistance under the scheme but will be required to set up a company registered in the United Kingdom. To qualify for consideration for assistance an applicant must show evidence that he possesses the financial and technical resources to carry out the proposed exploration programme or the means to employ others to do so.

QUALIFYING EXPENDITURE

3 Assistance will be provided in respect of qualifying expenditure on approved programmes of exploration for and evaluation of the minerals specified in Paragraph 1 above, provided the applicant has complied with the terms and conditions of the scheme. The exploration must have been carried out within Great Britain or on the UK Continental Shelf. (The scheme does not apply to Northern Ireland). In general the scheme provides assistance up to the time when

a decision can be taken whether or not to proceed with the development of a productive mine, quarry or other mineral source. Qualifying items will, for example, normally include expenditure on the following:

- a Geochemical, geophysical and other surveys directly related to specified areas.
 - b Trenching, test holes and borings.
 - c Exploratory shafts and underground exploration.
 - d Collection and assaying of samples, including bulk samples.
 - e Mineral processing and metal extraction assessments, including pilot plant operations.
 - f Direct costs of fuel, materials and labour; fees paid to contractors for carrying out qualifying work; hire of plant and machinery.
 - g Temporary buildings and ancillary works likely to be of no value at the end of the exploration phase.
 - h Other costs attributable to the project and which would not otherwise have occurred, eg fair wear and tear on plant and machinery; cost of feasibility studies leading to a decision whether or not to develop a productive mine.
 - i The rehabilitation of old workings or installations to the extent that this is necessary for the conduct of the exploration programme.
 - j Qualifying overheads related to approved expenditure.
- 4 Expenditure on the following will not qualify:
- a General studies including literature surveys and regional geology aimed at defining specific areas in which there are favourable signs of mineralisation.
 - b Costs (including legal and other professional costs) of acquiring concessions, mineral rights, land, planning permission.
 - c Buildings or other assets likely to have value on completion of the approved programme (but see 3(i.) above for fair wear and tear provision)

- d Any work which in the judgement of the Department does not require a reasonable proving of the extent, grade, workability and value of the mineral deposit.
- e Any work carried out prior to the date on which the Department is notified of details of the programme, any work not included in the programme of work submitted to the Department, and any work not agreed by the Department as qualifying for assistance.
- f Any work whose purpose is not related to new exploration, eg a programme to extend the development of a mineral deposit which is already being worked.
- g Any work for which planning permission has not been obtained unless the Department is satisfied that such permission was not required.

5 Assistance under the scheme will not be given in respect of expenditure which has benefitted from payments under the Investment Grants scheme or from Regional Development Grants.

APPLICATIONS FOR ASSISTANCE

6 Prospective applicants should approach the Department of Trade and Industry (21), Thames House South, Millbank, London SW1 (01-222 7000 Extension 1389 or 1003) who will be ready to discuss their proposals. Applicants will be required to provide the information set out at Annex 1 to this Guide. When a programme has been received the Department will comment as soon as possible on its willingness to pay contributions. Work carried out before the Department receives the programme will not qualify for assistance. The Department will normally agree to assist work carried out between the date it receives details of the programme and the date on which it makes comment, where the work in question would otherwise qualify for assistance and subject to the overall financial limits applicable to the scheme. Companies which begin work before the Department's comments have been received do so, however, at their own risk.

CONDITIONS TO BE OBSERVED PRIOR TO RECEIVING CONTRIBUTIONS

7 The Act specifies that the Secretary of State may lay down terms under which contributions will be paid and it requires compliance with certain conditions relating to the provision of geological information and to land planning. In general, a company, before receiving contributions, will be required:

- a Provision of information
to keep records of expenditure incurred on the programme; to allow the

Department or its representatives to inspect from time to time such records, as well as physical works arising from the programme; and to submit to the Department and to the Natural Environment Research Council (Institute of Geological Sciences) geological and other technical information including samples and material arising from the programme. Guidance on the form and detail in which this information will normally be required is set out at Annex 2 to this Guide.

b Planning permission

to satisfy the Department that planning permission for the work has been obtained or that it was not necessary to obtain it. In order that they will be able to meet this requirement, companies are advised to consult local planning authorities before and during all stages of work.

c Repayment

to agree to make repayment on demand of contributions received in respect of the programme (together with interest due) if any of the events described in Para 8 below occur. In such cases the applicant is also required to accept liability to repay with interest due all contributions received in respect of programmes executed prior to the present programme where such programmes were carried out in areas which overlap the area specified in the present programme, except where the Department may agree otherwise.

d Completion date

to agree to carry out the programme with reasonable speed and to submit all applications for contributions relating to the programme by not later than a date to be specified, subject to such extensions as the Department may allow.

e Tax information

to agree that the Department may pass to the Inland Revenue details of all financial transactions between the Department and the company in respect of the programme.

CIRCUMSTANCE IN WHICH LIABILITY TO REPAY ARISES

8 The company will be liable to make repayment on demand of all contributions received, plus the interest due, attributable to the programme, if any of the following events occur:

a Commercial production

if within twelve years of last payment of a contribution any minerals are

extracted in commercial quantities from an area within that specified in the programme (the exploration area) or from any orebody part of which is situated in that area (but see Para 12 below).

b Failure to notify the Department

if within thirty days of the event the company fails to inform the Department:

- i that work in the exploration area has been suspended for a period of six months
- ii that the company has taken a decision not to carry out further work in the exploration area
- iii that the company has taken a decision to initiate the construction of works required to bring into commercial production a mineral source in the exploration area
- iv that commercial production has begun from a mineral source in the exploration area.

c Assignment or sale

if without the consent in writing of the Department the company assigns, sells or otherwise transfers all or any part of the company's interest in the programme or of any lease held by the company giving it a right to explore for or to exploit minerals in the area specified in the programme. Where such assignment, whether for value or otherwise, is proposed for operational purposes, eg on setting up a separate company to mine deposits discovered in pursuance of the programme, the Department will be prepared to consider releasing the company from its liability to repay in return for the assumption of a similar liability by another company.

d Liquidation

if the company goes into liquidation.

e Guarantors

if the company fails to obtain a suitable guarantor or to give adequate security within three months of being required by the Department to do so.

PROGRAMMES WHICH ARE ABORTIVE OR END WITH QUALIFIED SUCCESS

9 Abortive programmes At the request of the company the Department may agree to classify a programme, or a series of programmes relating to one area, as "abortive", provided it is satisfied that the minerals discovered by the programme(s)

are of little or no commercial value. Where the Department so classifies a programme or programmes the company will be released from obligation to repay contributions received and any interest due, in respect of the area covered by the programme(s).

10 Programmes which meet with qualified success In cases where a programme, or a series of programmes relating to one area, discover minerals which in the view of the Department do not justify a classification of "abortive" but where the value of the minerals found is in the opinion of the Department such that it would be reasonable to modify the repayment liability, the Department will, at the request of the company, consider such modification.

TERMS FOR INTEREST ON CONTRIBUTIONS

11 It is a condition of receiving contributions that the company shall agree to pay annual compound interest on such contributions at the higher Public Works Loan Board (PWLB) annuity rate for a 10-15 year loan in force on the date payment of contribution is made by the Department plus one half percentage point, in the event that repayment of the contributions becomes due. (Changes in the PWLB rate are notified in the London and Edinburgh Gazettes). Where a series of contributions are made in respect of a programme each tranche will bear the appropriate interest rate. When the accumulated interest on a tranche has reached a total of 20% of the value of the tranche further liability for interest on that tranche shall cease.

DEFERRED REPAYMENT

12 If an obligation to make immediate repayment arises as a result of commercial production (see Para 8a above) and if the company so wishes the Department may agree to receive repayment by instalments. In such cases a loan will be formed by aggregating the total of contributions made in respect of the programme with the total of interest outstanding at the date commercial production begins. Simple interest will be payable on the loan. The yearly rate of interest will be the higher PWLB annuity rate for a 10-15 year loan in force at the time the loan is formed plus one half percentage point. During the repayment period such interest will be charged on the balance of the loan from time to time outstanding.

13 Payment of the first instalment will become due and payable eighteen months after commercial production begins and each subsequent instalment at twelve month intervals thereafter. Apart from the final instalment each annual repayment will

not be less than 3% of the net realisable value* of any minerals extracted in the year ending six months before the due date of the relevant repayment, or such sum as may be required to pay the interest outstanding at the due date of repayment, whichever is greater.

SECURITY

14 Agreement by the Department to deferred repayment arrangements will be subject to the provision by the company of guarantees or security adequate to ensure payment of the outstanding debt.

GENERALSHIP OF INFORMATION

15 Information arising out of operations on a programme shall become the property of the Department and may be published:

- a if the company is in breach of any of the conditions of the scheme;
- b if following termination of work on the programme by the company, the Department at the request of the company (see paragraph 7 above) has notified the company that it is released from any liability to repay contributions received in respect of the programme and for interest on such contributions, and two years have elapsed from the date of such notification;
- c if twelve years have elapsed since last payment of contributions to a programme unless the Department is satisfied that minerals in the programme area are being adequately developed.

The provisions of this paragraph will, however, not apply if the company repays all contributions received on the programme together with interest due.

APPLICATION FOR CONTRIBUTIONS

16 As work progresses the applicant may submit, not more frequently than half yearly, applications for contributions towards qualifying expenditure described in his programme. These applications must be supported by evidence that the expenditure has been incurred and the work carried out, together with the geological and other technical information arising from the programme during the relevant period (Annex 2 refers). Evidence will also be required as to the

* "Net realisable value" will be defined by agreement between the Department and each individual applicant in the light of each case. In the case of a metalliferous mine it will normally mean the actual or deemed net proceeds of sale (ex mill) of all concentrates produced from the exploration area after the deduction of the following: all charges properly incurred in delivering the concentrates thereof to the point of sale; the cost of the concentrate; and any further charges of the

condition on planning permission. In addition, where applications are made in respect of sums payable to third parties, evidence will normally be required that such payments have been made.

17. Applications for contributions will be dealt with as soon as possible after they are received. Payments at the rate of 5% will be made on the actual costs of qualifying expenditure except where these are higher than the estimated costs specified in the programme prior to the start of operations. In this event payments will normally be based on the estimated costs. If unexpected conditions are encountered during the execution of a programme, eg geological problems, entailing delay or higher costs, the applicant should inform the Department as soon as possible and may submit for consideration a revised programme with up-to-date estimates as a basis for subsequent applications for contributions.

ASSISTANCE FOR LATER PHASES OF A PROJECT

18. The fact that the Department has provided financial assistance for any particular phase of an exploration project implies no commitment to assist programmes covering subsequent phases of the same project. However additional assistance will not normally be refused if in the opinion of the Department the further work is justified under the scheme and can be accommodated within the limit of funds made available by Parliament.

CESSATION OF LIABILITY

19. When a company has been released by the Department from its liability to repay on a programme or when a company has repaid with the interest due all contributions received on a programme no further liability for repayment remains with the company in respect of that programme, and the conditions of the scheme are no longer binding on the company in respect of the programme.

ENVIRONMENTAL ASPECTS

20. Planning permission. All development and change in the use of land in Great Britain is controlled under the Town and Country Planning Acts. Development includes both operations and material change in the use of land. The planning powers contained in the Acts constitute a positive instrument for examining, and reconciling to the fullest possible extent, the conflicting claims on land use. In England, the Secretary of State for the Environment is the central authority of the administration of planning. In Scotland and Wales it is the responsibility of the appropriate Secretary of State. In the first instance, however, the determination of whether an activity does or does not require planning permission, and a decision whether or not permission is granted, is the responsibility of the

local planning authority.

21 The scheme will in no way affect the operation of the normal statutory planning machinery. The fact that a company is receiving assistance under the scheme will not remove the need to obtain planning permission where appropriate; equally it will not be a valid argument in support of an application for planning permission to say that such assistance is being or will be given.

22 Nature Reserves and Sites of Special Scientific Interest The Natural Environment Research Council (Nature Conservancy) has responsibility for Nature Reserves and Sites of Special Scientific Interest. They will be told in confidence the location, types and duration of the work proposed by applicants. If they consider that the proposed work might affect any of these areas, the applicant will be asked to consult them or their nominee. In such cases payment of contributions would be subject to satisfactory arrangements having been made for the conduct of the work.

23 Water Resources River authorities in England and Wales have a primary duty to conserve, redistribute and augment water resources under the Water Resources Acts 1963-1971. Companies are reminded particularly of Section 78 of the 1963 Act which requires any person who proposed to sink a borehole to search for or work minerals to give notice, in a form prescribed in the Water Resources (Miscellaneous Provisions) Regulations 1965, to the appropriate river authority. On receiving notice, the authority may serve a Conservation Notice on the operator requiring him to take reasonable steps to conserve water resources. Recipients of a Conservation Notice have the right to appeal to the Secretary of State for the Environment. These requirements are not necessary in Scotland where underground water is a minor source of public supply.

Department of Trade and Industry
May 1972

MINEWATER EXPLORATION AND REVENUE ACT 1972

REGISTRATION OF CLAIMS IN SUBJECT OF A SUBMISSION FOR CONSIDERATION FOR FINANCIAL ASSISTANCE FOR MINEWATER EXPLORATION

Further details may be asked for to supplement the basic information which is requested below. Where the applicant has made a previous submission it may be appropriate to refer to this.

DETAILS OF APPLICANT(S)

- 1 (a) Name, address and telephone number of applicant (a)
- (b) Address of Registered Office
- (c) Name, address and telephone number of the person to be contacted for any further information required, and of a deputy
- (d) Name and address of a UK bank from which a reference can be obtained

- 2 Who will be carrying out the proposed exploration (if not the applicant)
 - (a) Name, address and telephone number
 - (b) State briefly the relationship with the applicant

FINANCIAL INFORMATION

- 3 Provide:
 - (a) a copy of the charter, memorandum and articles of association or other constitutional document relating to the applicant
 - (b) A copy of the applicant's latest audited accounts and the latest directors' report

(n) Although the Department is ready to consider enquiries from individuals from unincorporated companies it will in such cases require at an early stage a copy of the memorandum to be submitted in the course which will be...

- (c) In addition, if the applicant is a subsidiary company, a copy of the latest audited accounts of its ultimate parent company and of the group of which it forms part

State:

- (d) Whether the company or business or any directors or partners are associated with any other business. If so, further particulars may be required
- (e) Whether the applicant company's stock or shares or those of an associated company are quoted on a recognized stock exchange, and if so, give the name of the exchange

DETAILS OF THE EXPLORATION PROJECT

- 4 (a) Name by which the project is known to the applicant
- (b) Details of site or address; please include three copies of a map or overlays (which should be to the scale of 4 miles to the inch) indicating the boundaries of the area to be explored and giving national grid references (in the case of projects at sea the coordinates on European datum for the area should be quoted) Maps etc should be signed for identification purposes by a director of the company.
- (c) Minerals sought
- (d) Provide three copies of a separate statement, with maps or overlays, and plans as appropriate, of the relevant geology of the area, showing existing workings, if any, and identifying the specific targets (eg mineralised zones, including lodon, and geophysical and geochemical anomalies etc)
- 5 (a) Who owns the mineral rights?
- (b) What terms have been arranged to obtain access for exploration purposes?
- (c) What terms (if any) have been agreed for working the minerals?
- 6 What arrangements are being made for planning permission?

DETAILS OF WORK PROGRAMME

- 7 (a) Describe the work programme for which assistance is being sought
- (b) State proposed starting date and target date for completion of the work programme
- (c) Provide three copies of a separate statement giving a breakdown of the estimated cost of the work programme for which assistance is now being sought together with information on how these estimates have been compiled. (An indication of the breakdown required is given in paragraph 3 of the 'Guide for Industry'. Paragraph 4 of the Guide indicates the kind of expenditure which will not normally qualify for assistance)
- (d) State total amount of financial assistance which you are seeking from the Department of Trade and Industry in respect of the work programme described in this application
- 8 How is it proposed to finance the balance of the cost of the exploration project? Indicate separately any contribution from publicly financed sources

SUBMISSION OF APPLICATIONS

- 9 The application should be accompanied by a statement in the following form:
- (i) We wish the proposed exploration programme outlined in this application to be considered for financial assistance under the Mineral Exploration and Investment Grants Act 1972. To the best of our knowledge and belief the information given above is correct
- (ii) We understand that before any monies are advanced by the Department we will be required to give undertakings in writing regarding the terms and conditions governing the scheme
- (iii) We agree that the information given in this application may be made available in confidence to the Institute of Geological Sciences.
- (iv) We agree that the information given in Sub-paragraphs 4(h) and 7(a) and (b) may be made available in confidence to the Nature Conservancy.
- 10 Applications must be signed by a director, who should also sign any maps or drawings submitted.

MINERAL EXPLORATION AND INVESTMENT GRANTS ACT 1973

GEOLOGICAL AND OTHER TECHNICAL INFORMATION REQUIRED UNDER SECTION 1(2)

Companies accepting assistance under the Act will be required to make over to the IPI for transmission to the BGS (Institute of Geological Sciences) for the purpose of the geological survey of Great Britain, all geological data including processed material relating to exploration, evaluation or exploratory development on the surface or underground carried out by, or for, the company including maps, plans, reports, sections, borehole logs, mineralogical studies and, where requested by the BGS, representative samples of material collected during the progress of projects.

Separate returns of information are required where appropriate under the following headings:-

Geochemistry Copies of:-

- (a) Geochemical maps showing the location of sampling sites and untreated analytical data with appropriate map references.
- (b) Maps showing processed data and other material for use in the interpretation of the data.
- (c) Reports on geochemical surveys conducted by, or on behalf of, the company.
- (d) Borehole analytical logs.
- (e) Results of chemical analyses (wet or instrumental) of rock and mineral samples, identifying the analytical methods employed.
- (f) Assay plans and sections.

Geophysics Copies of:-

- (a) Records of geophysical measurements actually made indicating the site and values of all observations, the reduction and processing procedure adopted in compiling maps or other data to be provided under para (b) below and full details of the equipment and experimental arrangements utilised.
- (b) Maps, plans and profiles showing geophysical information in the form which it has been processed for geological and mineral assessment of the area.
- (c) Geophysical borehole logs and data from physical property tests on collected specimens.

Mineral Engineering

Reports on, including the results of, laboratory and/or pilot plant investigations aimed at determining the recoverability of valuable mineral and/or metals whether carried out by the company or by consultants to the company.

Aerial Photography

Copies of aerial photographs obtained by surveys assisted under the Act or an assurance that such photographs will be properly preserved and held accessible within Great Britain.

Samples including Rockhole Material

Under Section 23 of the Mining Industry Act 1976 the IGS have right of access to core and to take samples. Companies may also be required to supply to the IGS representative samples of up to 25% of core longitudinally in continuous lengths, or to supply up to 25% of other samples for the purpose of record or examination, or for display where no breach of security is involved.

AN OUTLINE
OF
METALLIC MINERALS EXPLORATION AGENCY

OF JAPAN

1972

METALLIC MINERALS EXPLORATION AGENCY
OF JAPAN

No.11 Mori Building
11 Akebono-cho, Shiba Nishikujo, Minato-ku,
Tokyo, Japan

Telephone: Tokyo 533-2801
Cable Address: TANKOJICYODAN (Tokyo)
Telex: J24376

1. Establishment and Development

A) Establishment

The Metallic Minerals Exploration Agency of Japan, has had a forerunner, The Metallic Minerals Exploration Financing Agency, established on 20th of May, 1963, under the Metallic Minerals Exploration Financing Agency Law (or Law No.78, 1963) for the purpose of making loans to Japanese enterprises for the exploration of valuable or potentially valuable ore deposits

B) Development

- (1) In 1964, the name of the Agency was changed to the Metallic Minerals Exploration Agency of Japan, and the range of its activities extended to detailed geological survey.
- (2) In 1966 the Agency was entrusted by the Ministry of International Trade and Industry to take further steps to promote regional survey activities previously under the operation of the Geological Survey, Institute Agency of Industrial Science & Technology.
- (3) In 1968, the Agency was responsible for the following activities:
 - (1) the lending of necessary funds for exploration of metallic mineral deposits,
 - (2) the undertaking of geological structure surveys as required for such explorations of metallic mineral deposits,
 - (3) the guaranteeing of obligations resulting from the raising of necessary
 - (4) the collection and offer of data regarding the development of metallic mineral resources and the despatch of survey teams.
- (4) Since 1970, the Agency has been carrying out cooperative fundamental geological surveys in order to help to promote natural resources development in developing countries and to exploit their promising potentials.
- (5) In 1971, the Agency was carrying out a survey of the cooperative regional development plan, mainly the one of natural resources, in the regions of developing countries where Japanese enterprises are exploring non-ferrous metallic mineral resources.
- (6) In 1972, meeting the need of the times, the Agency will carry out the following activities: (1) the inauguration of the special financing system for the exploration of uranium ore deposits abroad on a "repay

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IV. Authorization of Funds for Domestic Exploration

A) Scope of the Project

The objective is to make loans to qualified individuals or enterprises to help finance their exploration activities. The Agency has been providing such financial aids since its establishment in 1963.

The terms and conditions of such loans are as follows:

- (1) Borrowers
An individual, to be eligible, must employ more than 1,000 full-time workers; an enterprise must be capitalized at Y50 million or more and employ more than 1,000 full-time workers.
- (2) Authorized Exploration Objectives
Copper, Zinc, Lead, Manganese, Gold ores
- (3) Limit of Financing
In principle, the ratio should be 60% or less of the cost of exploration. In special cases, where the exploration is conducted in the areas far from working mines the limit might be raised to 70%.
- (4) Interest
7.5% per annum.
- (5) Repayment
In principle, the loans are to be paid back within six years, including a one year deferment. In special cases, however, the term of redemption might be extended to 10 years with one year deferment.

B) Budget

Fiscal Year	Investment by the Government	Borrowings	Owned Funds
1964	Y200 million	Y1,700 million	Y100 million
1965	Y200 "	Y1,700 "	Y300 "
1966	Y200 "	Y1,800 "	Y400 "
1967	Y100 "	Y2,000 "	Y500 "
1968	"	Y2,100 "	Y600 "
1969	"	Y2,200 "	Y600 "
1970	"	Y2,400 "	Y500 "
1971	"	Y2,300 "	Y700 "
1972	"	Y2,700 "	Y600 "

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C) Schedule for Fiscal 1972

Loans available from the Agency in fiscal year 1972 for domestic exploration activities amount to Y3,300 million, and are to be granted in two lots, one for the first half and the other for the second half of the fiscal year.

D) Results achieved

During the nine-year period from fiscal year 1963 through fiscal 1971, the Agency made loans to 17 companies (172 mines) to help them to work on exploratory tunnels (total length: 855 kilometers), test drilling (total depth: 3761 kilometers), and physico-chemical prospecting work (Y47 square kilometers of land in total). These categories cost Y22,900 million and Y22,100 million, 52.6% of which was accommodated by the Agency. Due to rapid progress in prospecting technology and the active pursuit of untapped resources on the part of industry, a total of 119.4 million tons of ore (copper--91 million tons; lead and zinc--27 million tons; manganese--1 million tons and gold--0.6 million tons) had been newly produced by the first half of fiscal 1971.

V. Regional Geological Survey

A) Scope of the Project

The regional geological survey project on copper, lead and zinc ores is carried out in the selected 27 districts as the first-stage activity of the ten-year national exploration programme which accelerates prospecting works for domestic base-metal mineral resources by mining companies.

Since 1966, the project in each district has been conducted by the Agency to ascertain the geologic structure of the district by means of geological survey, geochemical exploration, airborne magnetic survey, various ground geophysical exploration and deep structural drillings. Expenses of the project are granted by the Government of Japan to the Agency.

Basic geological survey project on two gold-silver mining districts has been conducted by the Agency since 1968 as a part of the five-year urgent rationalization plan on twelve gold mines. Expenses of this project have been granted by the Government, and other prospecting works are carried on by mining companies at their own expense.

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11) Budget

Fiscal Year	Regional Geological Survey	Basic geological survey of gold mines
1966	Y 122,722,000	-
1967	Y 220,650,000	Y 9,180,000
1968	Y 316,280,000	Y 8,215,000
1969	Y 361,980,000	Y 7,742,000
1970	Y 415,815,000	Y 7,580,000
1971	Y 414,254,000	Y 7,580,000
1972	Y 488,192,000	Y 7,710,000

C) Schedule for Fiscal 1972

The following survey works are under operation in 12 districts being continued from the preceding year.

- Photogrammetric mapping 1,975 square kilometer in districts
- Geological survey 2,480 square kilometers in 9 districts
- Gravity exploration 3,200 square kilometers in 6 districts
- Airborne magnetic survey 10,000 line kilometers in 3 districts
- Seismic exploration 10 line kilometers in one district
- Electric exploration 100 line kilometers in one district
- Structural drilling 10 holes 11,300 meters in 7 districts
- Detailed gravity exploration and one core drilling are conducted for exploration of gold deposits in 1972.

D) Results Achieved

During six years since the beginning of the project in 1966, geological surveys covering 13,049 square kilometers in 27 districts and using photo-grammetrically-made topographic maps of 17,288 square kilometers on a scale of one to ten thousand, geochemical reconnaissance survey in one district, airborne magnetic survey of 18,980 line kilometers in five districts, gravity exploration of 6,370 square kilometers in 11 districts, deep electric sounding survey of 28 line kilometers in one district, seismic exploration of 99 line kilometers in eight districts, sonic survey of 576 line kilometers in adjacent area of two districts, and 51 structure drillings of total 60,662 meters length. Field geological surveys have been carried out with 26,000 man-day geologists of universities, mining companies, prefectural governments, in most districts and conducted by a geological consulting company in one case.

Amount of works conducted by the Agency in the basic survey of two

gold mining districts comprising topographic mappings of 210 square kilometers, geological surveys of 510 square kilometers, geochemical reconnaissance survey, and electric prospecting (deep sounding and induced polarization method) of 62.5 line kilometers.

The regional geological survey in every district has been a local fundamental geologic set-up and geologic structures of the district concerned, and contributed well to the selection of areas favourable to activity of the following detailed geological exploration projects.

VI. Detailed Geological Explorations

A) Scope of the Project

The detailed geological exploration for Furuko and other base-metal areas is being carried out in the most likely areas selected by the preceding regional geological survey project.

The explorations have to show detailed geologic structures of the target areas by means of systematic core drilling, geophysical prospectings and exploration tunnels.

Expenses of the exploration works are contributed by the Government subsidy covering 60 percent of the total cost, and by prefectural governments and mining companies concerned, each sharing 20 percent.

B) Budget

Fiscal Year	Government Subsidy	Total Expenses
1962	Y 72,000,000	Y 120,000,000
1965	Y 91,500,000	Y 135,000,000
1966	Y 119,800,000	Y 199,750,000
1967	Y 121,600,000	Y 236,100,000
1968	Y 172,786,000	Y 287,950,000
1969	Y 218,020,000	Y 326,700,000
1970	Y 200,935,000	Y 287,800,000
1971	Y 209,530,000	Y 282,520,000
1972	Y 561,500,000	Y 935,915,000

C) Schedule for Fiscal 1972

The following exploration works are being operated in nine districts, six districts of which are continued from the preceding year.

Combined geophysical prospectings in four districts:

- Gravity exploration of 40 square kilometers in two districts
- Magnetic exploration of 80 square kilometers in four districts
- Electric exploration of 80 line kilometers in four districts
- Exploration tunnel of 2,800 line meters in two districts
- Exploration drilling of 103 holes, 57,000 line meters, in eight districts

D) Results Achieved

During the eight years since the beginning of the project in 1964, 443 drill holes (total length, 222,469 meters), gravity exploration (total areas, 30 square kilometers), and exploration tunnels (total length, 2,350 meters) were carried out at a cost of ¥2,510 million in the selected 12 districts.

From exploration works of the project emerges the detailed geologic structures of controlled localization of ores in each selected area, and thus helping to stimulate and speed up the prospecting activities of mining companies. In the course of the project, new ore reserves of more than 60 million tons and potential ores of 65 million tons, were discovered by the successful prospecting work of mining companies.

VII. Funds for Exploration and Guarantee of Liabilities in Other Countries

1. Loan for Overseas Exploration

A) Scope of the Project

This fund has been established on 1968 to finance overseas exploration of Japanese metal mining companies. And this year, the special financing system (i.e., the financing system on a "repay on your success" basis) has been newly introduced in order to promote uranium ore exploration.

(1) Borrowers

The eligible companies are those of Japanese metal mining who explore ore deposits in other countries. They include companies who supply funds for metallic minerals exploration to other Japanese or foreign companies.

(2) Authorized Exploration Objectives

Copper, lead, zinc, manganese, uranium, nickel, bauxite, and chrome ores.

(3) Areas

Districts except Southeast Asia and other developing countries.

(4) Purpose

The Agency's loan should be used to cover exploration expenditures and investments to obtain concessions or options of exploration.

(5) Limit of Financing

In principle, the loans of the Agency are within limit of 5% of the exploration expenditures. The limit may be raised up to 7% in special circumstances.

(6) Interest

Over 6.5% annually.

(7) Repayment

The loans are repayable within 10 years, including a term of deferment of one year.

B) Budget

(Unit: Million Yen)

Fiscal Year	Capital	Borrowed Money	Owned Funds	Brought Forward from The Previous Year	Total
1968	100	-	-	-	100
1969	200	-	-	-	200
1970	400	-	-	-	400
1971	600	-	-	34.5	634.5
1972	1,100	-	100	352	1,552

Note: The fiscal 1972 portion includes the special financing for uranium ore exploration.

C) Schedule for Fiscal year 1972

Loans available from the Agency in fiscal year 1972 for overseas exploration amount to ¥1,552 million, including the special funds for the uranium ore prospecting. According to applications from qualified private enterprises, the Agency examines exploration programs in detail. On approval by the Agency, the financing contracts will be agreed and loans will be made. These loans are free from any set or fixed condition as regarding the timing or amount.

2. Guarantee of Liabilities

A) Scope of the Project:

The Agency may guarantee debts of Japanese enterprises for their development of metal mines in other countries. The Agency has been rendering such service since fiscal year 1968.

(1) Guarantees

The eligible enterprises are those of the Japanese metal mining who are or will be engaged in the mining of metallic minerals and related ore dressing, smelting and other activities in other countries. They include those Japanese companies who supply funds of metallic mining development and related activities to other Japanese or foreign companies.

(2) Eligible Liabilities

The eligible liabilities are due to funds for metallic mining development and activities in other countries. Creditors are banks and other financial institutions.

(3) Authorized Mining Development Objectives

Copper, lead, zinc, manganese, uranium, nickel, bauxite, and chrome ores.

(4) Limit of Guarantee

In principle, the Agency may guarantee up to 80% of individual liabilities.

(5) Fee
0.2% annually.

B) Budget

Fiscal Year	Guarantee Fund		Guarantee Limit		Available
	Newly Invested	Total	All-over	New	
1968	1	1	10	10	10
1969	3	4	40	30	40
1970	7	11	165	125	130
1971	11	22	300	165	272
1972	10	32	480	150	387

Notes: 1) All guarantee funds are invested from the Industrial Investment Special Account.
2) The guarantee limit is 15 times accumulated total of guarantee funds (it has been 10 times up to fiscal 1969).

C) Schedule for Fiscal year 1972

The Available guarantee of liabilities in fiscal year 1972 is valued at ¥36,700 million, including what has been brought forward from the previous fiscal year. According to applications from qualified companies, the Agency examines details of their development projects and other factors. If the Agency approves of these, guarantee trust contracts and guarantee contracts will be agreed.

D) Results achieved

Since fiscal year 1969 (no guarantee in fiscal 1968), the Agency has agreed guarantee trust contracts and guarantee contracts worth ¥9,322,100,000 with four companies covering three development projects. Year-by-year and district-by-district contracts are shown as followed.

Fiscal Year	Zaire			Chile		Peru		Total	Accumulated Total
	Contract	Value	Contract	Value	Contract	Value			
1968	-	-	-	-	-	-	-	3,494	3,494
1969	2,017	958	-	-	-	-	-	2,289	5,783
1970	2,889	-	-	-	-	-	△6	3,539	9,322
1971	2,837	714	-	-	-	-	-	-	-

Note: Reduction of guarantee is identified by △ marking.

VIII. Overseas Geological Survey

A) Scope of the Project

From 1968 onward, there has been one major branch which is responsible for stimulating overseas explorations in support of those Japanese mining industries who find themselves confronted with many difficulties, financial and technical.

It applies modern prospecting techniques recently developed in all phases: it pioneers everywhere all over the world in search of underground mineral wealth still untapped; and its highly organized exploration system has achieved a number of remarkable discoveries up to now.

The target areas are selected by its own professional staffs, evaluating the potentialities of metallic mineral resources with careful study of existing information from various points of view.

Although subsidies from the Government Treasury are appropriated for these projects, it is to be noted that all the aspects of each undertaking are entirely under the control of the Agency.

For the promising areas identified by such basic surveys, however, intensive follow-up work may be succeeded by private companies involved. Of the expense of these activities the Government Treasury contributes two-thirds (5% for drilling), and private enterprises share with the balance, or one-third (5% for drilling).

Fiscal Year	Treasury Subsidies	Total Costs
1966	Y104,390,000	Y160,315,000
1969	Y171,486,000	Y240,444,000
1970	Y271,312,000	Y426,408,000
1971	Y359,200,000	Y526,101,000
1972	Y374,028,000	Y635,129,000

C) Schedule for Fiscal 1972

Nine projects are incorporated in the schedule of 1972; six are extended from previous year and three have been newly launched in fiscal 1972. These nine projects will cost Y635,129,000 in total, and comprise the following:

- (1) Airborne magnetic survey 9,200 line kilometers
- (2) Geologic interpretation of aerial photographs 9,000 square kilometers
- (3) Ground magnetic survey 60 line kilometers
- (4) Induced polarization survey 56.5 line kilometers
- (5) Geologic reconnaissance and detailed survey 3,090 square kilometers
- (6) Geochemical survey 68,000 samples
- (7) Drilling 9,170 meters (50 sites)

D) Results achieved

Since its inception in fiscal year 1966, the number of projects conducted under this subsidized exploration program has reached ten, their objective being several kinds of metallic minerals, such as copper, zinc, lead, nickel and bauxite. Of these, four projects have been completed and six are still in progress. The total area covered by these projects amounts

to 223,365 square kilometers. Activities so far carried out are summarized as follows:

- Overall expenditure has come to Y1,898,070,000.
- Airborne magnetic survey 112,060 line kilometers
- Geologic interpretation of aerial photographs 102,117 square kilometers
- Ground magnetic survey 90 line kilometers
- Gravity survey 520 square kilometers
- Induced polarization survey 270.4 line kilometers
- Geologic reconnaissance and detailed survey 7,817 square kilometers
- Geochemical survey 191,262 samples
- Drilling 24,001 meters (117 sites)

The majority of selected areas, as a result of these integrated explorations have been assessed as worthy of intensive follow-up programs. Among other things, nine are estimated to be economically feasible, viz., five copper deposits, one of them is associated with zinc and lead ores as well - and four nickel deposits.

IX. Technical Cooperation for Mineral Resources Development

A) Scope of the Project
The development of mineral resources is a very strong driving force in economic development, and affords the promise of speeding up the economic growth of the nations which have those resources.

In this conviction, we are pushing forward technical cooperation for mineral exploration and feasibility studies for regional development of mining areas in many countries.

The work of the Technical Cooperation for Mineral Resources Development consists of two surveys, which is the Geological Survey for Mineral Exploration and the Regional Development Planning Survey. These surveys are executed on grant basis within the framework of economic cooperation of Japan. The former started in fiscal year 1970 and the latter in fiscal year 1971.

The aims of these surveys are as follows:

- (1) Geological Survey for Mineral Exploration
In response to requests from the Government of developing countries which are considered to be potentially rich in mineral resources, the surveys are carried out in accordance with the agreement between Japan and

each country.

We can cooperate with developing countries at any stage of the works mentioned below.

- (a) Survey on regional appraisal of mineral resources
- (b) Reexamination of favourable areas for mineral resources
- (c) Survey on surface appraisal of favourable target areas
- (d) Three dimensional survey of favourable target areas
- (e) Economic evaluation and planning of mine development

These survey is carried out as a rule in three or four years in each area. The results of the survey are analyzed and compiled through discussion with the experts of your country in Japan, and the report is presented to the Government of your country.

It is expected that this survey will accelerate mineral resources development in the developing countries and at the same time provide them with fundamental data on starting point of economical development.

(2) Regional Development Planning Survey

In response to request from the Government of developing countries which have the mines worked by a Japanese mining company jointly with the countries, surveys are carried out in these mining areas. The detailed survey report is presented to the Government of the countries and is expected to be used for the promotion of sound social development of those areas.

We believe that our technical cooperation will bring not only economic prosperity but also a better friendship between the country concerned and Japan.

We should like to provide as much technical cooperation as possible in response to this need.

B) Budget

(1) Geological Survey for Mineral Exploration

Fiscal Year	Amount
1970	Y126,184,000
1971	Y359,273,000
1972	Y337,400,000

(2) Regional Development Planning Survey

Fiscal Year	Amount
1971	Y 29,620,000
1972	Y 14,991,000

C). Schedule for Fiscal 1972

Six projects are carried out: three projects are continued from the previous years and the others are the new projects to be started in 1972.

(1) Geological Survey for Mineral Exploration

Geological survey, geochemical survey, geophysical survey and diamond drilling are carried out in Indonesia, Peru, the Philippines, Liberia and Ethiopia.

(2) Regional Development Planning Survey

Survey are carried out in the northern part of Peru.

D) Results Achieved

In fiscal years 1970 and 1971, surveys containing four projects mentioned below were executed at an expenditure of Y565,077,000.

(1) Geological Survey for Mineral Exploration

The following three projects were carried out at a cost of Y535,457,000.

(a) Sulawesi Island district, Indonesia (15,000 sq.km)

Airborne magnetic survey, aerial photogeology, surface geological survey and topographical mapping.

(b) Yauri district, Peru (15,000 sq.km)

Airborne magnetic survey, aerial photogeology, photogeology and surface geological survey.

(c) Mindanao Island district, the Philippines (10,000 sq.km)

Photogeology, surface geological survey and geochemical survey.

(2) Regional Development Planning Survey

The survey in the southern part of the State of Shaba, Zaïre, was executed at an expense of Y29,620,000.

X. Mineral Resources Centre

A) Scope of the Project

The Mineral Resources Centre is collecting data and information on exploration and development of mineral resources, mining legislation of the foreign countries and other related matters on a world-wide scale, with the greatest efficiency. Such data and information are classified and arranged, and made available to persons concerned. The Centre also compiles up useful complementary information and analyses overseas geological, environmental conditions on the basis of the materials collected, and these materials are provided to the persons concerned.

The Centre started its work wholly subsidized by the Government in fiscal year 1968, and has consistently endeavoured to enlarge its foreign mineral information system since its establishment.

B) Budget

Fiscal Year	Amount
1968	Y 11,543,000
1969	Y 13,017,000
1970	Y 26,385,000
1971	Y 33,617,000
1972	Y 40,129,000

C) Schedule for Fiscal Year 1972

(1) Collection of data and information

(a) Collection of publications related to mining

- Geological maps and others

• geological maps, mineral distribution maps, tectonic maps and others which will be necessary for mining activity abroad

- books and other publications

• books and other publications necessary for the study of overseas mining conditions (geology, ore deposit, exploration, development, etc.)

(b) Commit to Mining Consultant

- commit surveys of the following items to mining consultants abroad

1. policies and systems in respect of mining of the foreign countries
2. activities of foreign enterprises
3. movements of international Organizations, such as United Nations
4. supply and demand conditions of the non-ferrous metal and their

foreign

5. other relevant matters

(c) Circuit Survey by Mining Missions

- To study overseas mining conditions, mining missions are dispatched to collect material regarding mining in North America, Middle Africa, East Africa, Middle and South African countries in the fiscal year.

(2) Dispatch of Mining Specialists

In this year, the Centre dispatches mining specialists to the following six countries, the objective being the establishment of mineral information systems over the world.

- United Kingdom ----- Cover for Europe, Middle East

- Australia ----- Cover for Oceania

- Canada ----- Cover for North America

- Peru ----- Cover for South America

- Zaire ----- Cover for Africa

- Philippines ----- Cover for South East Asia

(3) Publication Service

The Centre arranges and analyzes the collected materials and supplies to the persons concerned the following publications

(a) Overseas Materials (including the interior use)

Data and information arranged and analyzed mining conditions (for example, exploration, development activities, mining laws, etc.)

(b) Overseas Mining News
urgent materials

(c) Overseas Mining Information

Monthly publication on geology, exploration ore deposits, mining laws and political, economic, labour situation and various other materials in countries promising bountiful mineral resources.

(d) List of overseas materials collected

(e) Others
copy, library and reference services

(2) Analysis and Research Activities

Three committees, each specializing in geological analysis, environ-

merical analysis and comprehensive analysis, are established in order to promote analysis and research activities positively and efficiently in promising districts on the basis of data and information collected overseas.

D) Results Achieved

The following was completed in fiscal year 1971

- (1) Collection of data and information
 - (a) -published overseas materials in the form of lists, according to districts, countries and subjects
 - (b) -remunited to collect pertinent data and information to Japanese and foreign mining consulting firms and in addition, accomplished the survey of mining conditions in the U.S. (Alaska), Canada, South Africa and Zambia
 - (c) -despatched the survey missions to Asian and Oceanian countries, South African countries, North and South American countries
 - (d) -made microfilms of the geological maps of the collected materials
- (2) Dispatch of Mining Specialists

in fiscal year 1971, mining specialists were dispatched to Australia, United Kingdom, Peru and Canada to survey and study mining conditions in these countries, and their neighbourhoods.
- (3) Offer of data and information collected

The following have been published:

 - a) "Overseas Mining Information (Monthly)"
 - b) "Overseas Mining News"
 - c) "Overseas Materials (including interior use)"
 - d) "Lists of Overseas Materials"
- (4) Analysis and Research

Analysis and research activities in fiscal year 1970 were carried out about Middle and South American districts on the geological characteristics and environmental conditions of copper resources. In fiscal year 1971, research was concentrated on the southern part of Africa.

XI. Construction of a Geological Survey Vessel

The Agency is constructing a geological survey vessel at a budget of 2 billion yen. The ship will become operative from April 1974 and the major objectives of the operation will be the investigation and exploration of submarine mineral resources such as manganese nodules and also the geological mapping of the continental shelf and slope around the Japanese Islands.

- (a) Outline of the Geological Survey Vessel
- | | |
|--------------------|---|
| total displacement | more than 1,500 tons |
| major dimensions | length: 77.00 m |
| | width: 13.60 m |
| | depth: 5.30 m |
| | draft: 5.00 m |
| propulsion | 3,000 hp diesel, variable pitch propeller |
| speed | propulsion equipped with bow thrusters |
| | approximately 15 knots in full load and 85 |
| range | % power conditions with a 20% margin |
| complement | approximately 12,000 nautical miles |
| | approximately 55 including research specialists |
| major equipment | large-capacity cranes, high-power winches |

Quatrième session, vingt-septième Législature, 14 Elizabeth II, 1965
Fourth Session, Twenty-Seventh Legislature, 14 Elizabeth II, 1965

ASSEMBLÉE LÉGISLATIVE DE QUÉBEC
LEGISLATIVE ASSEMBLY OF QUEBEC

BILL 10

Charte de la Société québécoise d'exploration minière
Charter of the Quebec Mining Exploration Company

Première lecture
First reading

M. LÉVESQUE (Montréal-Laurier)

QUÉBEC
L'IMPRIMEUR DE LA REINE
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EXPLANATORY NOTES

Under section 122 of the Companies Act, Part II of that act, entitled "Joint Stock Companies General Clauses", applies without exception to every joint stock company incorporated by an act of the Legislature.

Consequently this bill contains only those provisions which relate to the definition of the objects of the Company, the constitution of its capital stock, the composition of its board of directors, its method of management and the subscription of its capital by the Government.

The provisions made inapplicable by section 20 relate to calls on subscribed shares, these rules being replaced by section 6.

It will be noted that the bill does not make the Company an agent of the Crown, so it will not be exempt from provincial or municipal taxation. However, since the provincial government is the only shareholder, the Company will have the advantage of the exemption from federal income tax allowed to companies not less than 90% of the shares of which is owned by Her Majesty in right of Canada or a province. The president alone will have the status of a civil servant who for a stated period cannot be dismissed, the remaining personnel being subject to the ordinary rules relating to private enterprise.

BILL 10

Charter of the Quebec Mining Exploration Company

HER MAJESTY, with the advice and consent of the Legislative Council and of the Legislative Assembly of Quebec, enacts as follows:

1. A joint stock company is incorporated under the name of "Quebec Mining Exploration Company" in English and "Société québécoise d'exploration minière" in French.

2. The Company shall have its corporate seat at or in the immediate vicinity of Quebec.

3. The objects of the Company shall be:

(a) to carry out mining exploration by all methods;

(b) to participate in the development of discoveries, including those made by others, with power to purchase and to sell properties at various stages of development, and to associate itself with others for such purposes;

(c) to participate in the bringing into production of mineral deposits, either by selling them outright or transferring them in return for a participation.

4. The authorized capital of the Company shall be \$15,000,000.

It shall be divided into 1,500,000 shares of the par value of \$10 each.

5. The shares of the Company shall be allotted to Her Majesty in right of the Province.

[[6. The Minister of Finance shall pay to the Company, out of the consolidated revenue fund, each year for a period of ten years, a sum of \$1,500,000 for 150,000 fully paid-up shares of its capital stock for which a certificate shall be issued to him in return for such payment.]]

7. The affairs of the Company shall be managed by a board of seven directors appointed by the Lieutenant-Governor in Council, and they shall be the directors within the meaning of the Companies Act.

8. The president of the Company shall be appointed by the Lieutenant-Governor in Council and shall remain in office for ten consecutive years.

He cannot be dismissed except for cause and his salary cannot be reduced.

He shall be *ex officio* a member of the board of directors.

9. Two members of the board of directors shall be appointed for five years as permanent officers of the Company.

The other four members shall be appointed for four years.

However, at the time of the first appointment, one shall be appointed for one year, one for two years, one for three years and one for four years.

10. Each member of the board of directors, including the president, shall remain in office after the expiration of his term until he has been replaced or re-appointed.

Except in the case of the president or a permanent officer, every vacancy occurring during a term of office shall be filled for the unexpired portion of the term of the member to be replaced.

11. No person shall hold office as a director unless he resides in the Province, but no share qualification shall be required.

12. No director shall have an interest in any mining exploration or operation undertaking, or in any undertaking for the manufacture or sale of equipment or materials used in mining exploration or operations, or in any undertaking to provide services for such purposes.

If a director had such an interest at the time of his appointment, or if such an interest devolves to him subsequently by succession, gift or otherwise, he must promptly dispose thereof.

An interest in any security listed on a recognized stock exchange shall not give rise to the application of this section, if it is equal to less than a one ten-thousandth part (0.01%) of the total outstanding amount of such security.

13. The board of directors of the Company shall meet at least once a month.

Subject to sections 14 to 16, the board shall have the exclusive authority to bind the Company in anything concerning:

(a) the acquisition of mining properties or of any interest therein;

(b) the sale of mineral deposits, mining properties or any interest therein;

(c) any additional remuneration to the employees of the Company in respect of discoveries.

14. The president shall have full executive power for the management of the affairs of the Company, except those reserved to the board of directors, but including the acquisition of mining properties or any interest therein at a cost not exceeding \$5,000 in each case.

15. The Lieutenant-Governor in Council shall fix the salary of the president and of the officers who are directors, their additional remuneration in respect of discoveries, and any indemnities to which the other members of the board are entitled.

16. Without prior authorization by the Lieutenant-Governor in Council, the Company shall not:

(a) make any contract for participation in the exploration and development of a mining property binding it for more than five years;

(b) make any other contract binding it for more than two years;

(c) sell mineral deposits, mining properties or any interest therein otherwise than by auction sale or public tender;

(d) contract a loan which increases to more than \$500,000 its total outstanding borrowings.

17. The accounts of the Company shall be audited by the Provincial Auditor once a year and also whenever ordered by the Lieutenant-Governor in Council.

18. The Company shall each year make a report of its activities to the Minister of Natural Resources.

Such report must contain the information which the Companies Act requires the directors to give each year to shareholders and shall be laid before the Legislative Assembly by the Minister.

19. The dividends paid by the Company shall be fixed by the Lieutenant-Governor in Council and not by the directors.

No dividend shall be declared the payment of which would reduce the Company's accumulated surplus to less than one-third of its paid-up capital.

20. Sections 154 to 158 of the Companies Act shall not apply to the Company.

21. This act shall come into force on the day of its sanction.

UNITED NATIONS DEVELOPMENT PROGRAMME



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UNITED NATIONS REVOLVING FUND FOR NATURAL RESOURCES EXPLORATION

Report by the Secretary-General^{1/}

INTRODUCTION

1. The United Nations Revolving Fund for Natural Resources Exploration (the Fund) has been created, as a separate unit with its own identity, in order to extend and intensify the activities of the United Nations system in the field of natural resources exploration in developing countries, utilizing for this purpose voluntary contributions and funds generated through the production of resources discovered or developed with the assistance of the Fund in such a manner as to ensure its revolving nature derived from the self-help principles for the mutual benefit of developing countries.^{2/}
2. The Fund, established as a trust fund by the General Assembly and placed in charge of the Secretary-General, is administered on his behalf by the Administrator of UNDP. The Governing Council of UNDP will be the governing body of the Fund for the first four years at the end of which, according to Economic and Social Council resolution 1762 (LIV), the Economic and Social Council will review, in the light of the experience gained, the functions and institutional arrangements as well as the repayment system of the Fund, with a view to recommending to the General Assembly changes and improvements, taking fully into account the comments of the governing body and the Committee on Natural Resources.

^{1/} This Report has been revised in accordance with recommendations contained in the Note by the Administrator (DP/129).

^{2/} See General Assembly resolution 3167 (XXVIII) and Economic and Social Council resolution 1762 (LIV).

3. In resolution 3167 (XXVIII), the General Assembly requested the Secretary-General, in close collaboration with the Administrator of the UNDP and with the participation of the International Bank for Reconstruction and Development, to prepare operational procedures and administrative arrangements of the Revolving Fund for Natural Resources Exploration for approval by the Governing Council. This report was prepared accordingly.

4. Upon approval of the operational and administrative arrangements by the Governing Council and with the availability of sufficient funds to initiate and sustain its activities, the Fund will become operational.

CHAPTER I - OPERATIONS

5. The operational procedures and administrative arrangements set out below are based on the following premises:

(a) The Fund will provide a form of co-operation in the field of natural resources to developing countries additional to the assistance available to these countries through projects financed under their country programmes within their indicative planning figures (IPFs), or through regional or inter-regional projects when appropriate.

(b) While the Fund can ultimately become self-sustaining, it must until then rely upon voluntary contributions.

(c) When the revenues of the Fund eventually become sufficient for it to be self-sustaining, the Fund will provide a means for mutual assistance and co-operation among developing countries.

(d) As a new and unique venture, the Fund's procedures and arrangements must be flexible and experimental, especially as the Fund will be largely devoted to exploration activities which inevitably involve a high element of risk and uncertainty, and its success will be dependent upon a prudent approach to project selection, good management in project execution and the employment of the best available professional expertise.

6. The Fund will build up its own technical and management staff as expeditiously as possible and commensurately with its resources and the volume of operations. In the initial stages it will utilize to the greatest extent possible existing staff in the United Nations system thereby keeping the Fund's overhead costs to a minimum. Any additional costs incurred by the United Nations agencies in respect of activities on behalf of the Fund will be reimbursed to the respective agencies out of the Fund's resources.

7. The Fund is distinguished from other forms of development assistance provided by the United Nations system by two factors: (a) the revolving nature of the Fund and (b) Replenishment Contributions to the Fund based on the proceeds of production following a successful exploration project.

Operational principles

8. The revolving nature of the Fund affects the operational principles with regard to (a) the type of natural resources to be explored, (b) the criteria for project selection, (c) the types of services to be provided and (d) the phased approach to the design of projects.

9. The natural resources to be explored should have a potential market and the exploration methods for their discovery should fall within the financial resources of the Fund. All types of mineral resources exploration may, in principle, be included within the scope of the Fund. Due mainly to the fact that certain types

of exploration would probably be too expensive to be undertaken by the Fund until it has received or earned substantially larger resources than are likely to be at its disposal during the early stages, it is believed that the Fund should concentrate its activities during the initial stages on exploration for solid minerals.

10. Projects will be selected on the basis of their technical and economic viability and, therefore, their potential for contributing to the country's economic development and ability to help achieve the revolving nature of the Fund. At the same time, however, in selecting projects due consideration will be given to the equitable distribution of the Fund's resources and to the special situation of the least developed countries and of developing landlocked and island countries, consistent with the revolving character and objectives of the Fund.

11. The services to be provided by the Fund will be exclusively in the exploration and associated pre-investment fields, broadly defined. They will not include broad geological surveys, training or institution building, as such, although they will naturally provide opportunities for on-the-job training of nationals, transfer of technology and utilization of national institutional facilities to the extent that these contribute to the expeditious execution of the project as determined by the management of the Fund. Such broad surveys, training and institution-building projects, as well as the other technical assistance and pre-investment services traditionally provided by UNDP will continue to be available to the developing countries under their IPFs.

12. The Fund may engage in such research activities as would contribute to the fulfilment of its main objectives, consistent with the revolving character of the Fund.

13. Project operations will normally be designed in phases. This will enable the Fund throughout an exploration sequence to take the appropriate decisions to modify or re-orient project activities and to discontinue less promising avenues to avoid losses. By phasing and selective progression, the Fund's projects will concentrate on those areas and activities that, in the light of intermediate project results, are considered most promising. Exploration activities will generally fall within the following categories and may be initiated or terminated at any phase of the exploration sequence:

(a) Preliminary activities to verify and evaluate geological and related data provided by the applicant country ^{3/} and limited field checking within the area or areas said to possess good potential for mineral development;

(b) Technical reconnaissance within the chosen area or areas using photo-geological, geochemical, geophysical, and other techniques to define more precisely targets for detailed prospecting;

^{3/} Countries where insufficient geological and related data are available for the purpose of making a request will normally first be investigated through a UNDP project financed from the country's IPF. Where a country's IPF cannot accommodate such preliminary reconnaissance, the Fund may in exceptional circumstances undertake a limited survey in such a way as to identify a potential project area.

(c) Detailed evaluation including large-scale mapping of the targets, detailed geochemical and geophysical investigation, trenching, pitting and prospect drilling to limited depths to outline geological structure in depth, and as far as possible to obtain information on the order of magnitude of tonnages and grades of possible ore bodies. Additionally, limited beneficiation tests and preliminary studies of infrastructure, marketing, profitability, etc. may be included.

14. The successful conclusion of 13(c) can be defined in regard to most mineral deposits as completion of the pre-feasibility phases, e.g., indication of a deposit which is potentially economic. Further work required to produce the data which, when and if viability is established, will provide the basis for bringing together the financial and technical requirements for reaching the production stage is defined for Revolving Fund purposes as the feasibility study. The data referred to above will result in relatively precise definition of tonnages, grades, principal minerals and by-products, beneficiation methods and recoveries, infrastructure and manpower needs, and all the economic elements which will determine the profitability of the enterprise. Such investigations require heavy expenditure closely related to the production stage of resources development. Expenditure of this magnitude is likely to be beyond the Fund's financial capacity in the initial years if Replenishment Contributions were limited to those proposed in paragraph 20 below for the earlier phases of exploration defined in paragraph 13. The Fund could, however, undertake feasibility investigations at the request of Governments: in these cases special arrangements for reimbursing the Fund for these costs would be required.

15. An exploration programme may commence with pre-project activities and may continue through subsequent phases as favourable results are obtained. Where earlier exploration, whether financed by UNDP or other public or private sources, has yielded favourable results, the Fund's activities may commence at a later phase in the exploration sequence.

16. Phasing and selective progression, whereby decisions on further activities are dependent on technical and economic assessment of previous results, requires an objective decision-making capability by the Fund as well as authority to terminate a project when findings are disappointing or other circumstances impair its chances of success. As the ability to continue, terminate or modify a project is basic to the effectiveness of the Fund, the Project Agreement with the recipient government will stipulate such authority. In order to assure recipient governments that the Fund will proceed vigorously, however, the Fund will be obligated to carry out at least a minimum amount of work as the first phase of a Fund project. When the exploration results of a Fund project have attracted public or private investment interests of a quality and quantity assuring effective achievement of objectives, the Fund should be in a position to discontinue its activities while maintaining its right to Replenishment Contributions.

Replenishment Contributions

17. Replenishment Contributions to the Fund are not intended to be repayment of loans but rather to provide the Fund, from its successful projects, with a share of the proceeds from resulting production expected eventually to make the Fund revolve, so that its resources will be replenished and the Fund will be able to continue its

exploration activities for the benefit of developing countries. Governments requesting projects will be required to assume an obligation to make such contributions to the Fund (a) only for successful projects when the resulting mines come into production and (b) at rates based on the value of the resources produced, limited in time. These obligations will be set forth in a Project Agreement which will be effective for a period of 30 years (see Chapter III).

18. In order to identify the successful projects that may lead to Replenishment Contributions to the Fund, the Project Agreements for exploration activities between a Government and the Fund will delineate and define the project area to be explored. The project area will be declared by the Government a "reserved area" under the mining laws of the country or treated in a comparable manner to ensure the rights of the Fund. Such a declaration will not affect existing mining rights. The agreement will specify procedures whereby portions of the reserved area will be relinquished by the Fund except for smaller "target areas" of limited size designated as a result of the work of the project. The obligation of the Government to make Replenishment Contributions to the Fund will relate to all production of natural resources which have been identified in the target areas and reported upon by the Fund project. The basis for Government liability for Replenishment Contributions will thus be the location of the deposit in a target area defined by the project and reference in a project report to the existence of a resource or resources.

19. The agreements with Governments may also provide for the sale by the Fund or for the benefit of the Fund of documentation produced by the project.

20. Replenishment Contributions for exploration projects will be at a uniform rate of 2 per cent of the fair market price of the reported mineral in its first marketable stage at the place where it first reaches such stage, for a period of 15 years from the start of commercial production.^{4/} For products valued in the refined stage, the Fund and the host country will negotiate the value basis in advance whenever it is known that the exploration is aimed at the discovery of such minerals.

21. The 15-year period over which the 2 per cent will be due will be counted from the time the mine commences commercial production and will be automatically suspended for periods of non-production and extended accordingly. Where economically marginal projects may be prevented from coming into production because of the 2 per cent Replenishment Contribution, the Government and the Fund may agree to a lower percentage over a period longer than 15 years or to the payment of a percentage higher than 2 per cent for the balance of the period.

22. It is recognized that Economic and Social Council resolution 1762 (LIV) refers to "the need for the total repayment to bear close relationship to the amount originally loaned, bearing in mind the need to ensure the revolving nature of the Fund".

^{4/} The relationship between exploration costs for geothermal energy resources and the value of the energy released would be such as to require a formula for the Replenishment Contribution other than the standard formula referred to above. An alternative formula for geothermal energy, and probably also for petroleum and gas, might be developed by the time the Fund is in a position to enter those fields.

23. In exceptional cases, where Replenishment Contributions would reach levels considered excessive, Governments may propose to the governing body that it consider the application of a ceiling to its total Replenishment Contributions. In considering such a proposal, the governing body would no doubt give due consideration to the position of the country concerned as well as to the Fund's over-all financial position at the time and to the need for the Fund to revolve.

24. All Replenishment Contributions will be made in convertible currencies.

Financial outlook

25. It is not possible to forecast with any precision the financial resources that are required for the first years of the Fund's operations or for later when the Fund may have reached a more or less constant level of operations. Neither is it possible to predict accurately the income that will accrue from Replenishment Contributions by producers of minerals found on the basis of Fund exploration results and the time span for the Fund to become revolving. Nevertheless, certain considerations enable tentative conclusions to be drawn as to how the Fund's resources may best be utilized.

26. The level of financial resources required is strongly influenced by the phased approach in exploration activities to be undertaken by the Fund, each successive phase as described in paragraph 13 above generally being considerably more costly than the previous one. If all requests received were to involve only first phase activities, the Fund could operate in the first years with modest resources. The Fund would, however, then have to be sure that its resources would grow rapidly over the next four to five years in order to meet the increased costs of later phases of continuing projects and the inflow of new requests.

27. It may be reasonably expected, however, that incoming requests will not relate exclusively to first phase activities; some good projects may concern exploration of areas already considered to be soundly selected or investigation of exploration targets already located. While Fund expenditures on a project initiated in an advanced phase will generally be less than total expenditures on a project started in an earlier phase and carried through succeeding phases, the assumption that the Fund will receive projects that start in different phases means that the initial over-all resources of the Fund will have to be higher than if all requests relate to first phase projects.

28. Funding policies of the Fund should reflect the nature of the Fund's phased operations. Full funding of projects would be impractical and would tie up too large a proportion of the over-all financial resources available because only a limited number of projects undertaken will carry through to subsequent phases and the costs of succeeding phases can generally only be roughly estimated as their nature and extent are dependent upon the results of preceding phases. The decision not to apply full funding, however, can only be made with the understanding that the level of contributions in future years will not decrease and that the further activities on projects carried forward will have to receive priority over new projects. Thus, in general, new projects would have to be undertaken on the basis of additional contributions.

29. Preliminary estimates based upon the considerations contained in the preceding paragraphs indicate that the Fund could become operational at an annual level of contributions for the first years below the \$20 million figure used in previous documentation. The Fund could start a programme of some 10 projects, with new projects coming in at a rate of 15 to 20 per year, if contributions totalled about \$7 million for the first two years combined, rising to about \$18 million for the third and fourth years combined. Annual expenditures might stabilize in the seventh or eighth year at a level of about \$12 million for a programme involving some 20 new projects per year. It should be emphasised that the above estimates are designed to reflect a minimal level of Fund operations. If larger financial resources were available, the capacity of the Fund to undertake projects would be increased accordingly, and the scope of Fund activities could also be enlarged.

30. The above estimates have been made on the basis of the considerations mentioned in paragraph 9 regarding the natural resources to be explored. If it were decided to explore natural resources other than solid minerals, and particularly if petroleum and gas were to be included during the early stages of the Fund's activities, the funds required would be substantially higher.

31. The level of income to be generated from Replenishment Contributions and the time span within which such payments would make the Fund revolving are even more difficult to estimate. Commercial experience does not yield readily comparable data. Although the Fund will generally execute exploration projects in a manner similar to a commercial operation, the income of a commercial enterprise is usually derived from diverse sources and is acquired in a manner different from the Fund's prospective revenues.

32. Although a certain number of past UNDP-financed mineral exploration projects would qualify as "successful projects" under the provisions of paragraph 18 above, UNDP experience thus far has been influenced by many factors not germane to the Fund's proposed method of operations. Consequently, it can be used only with considerable reservations and qualifications as a measure for determining the period in which such projects would have produced a revolving fund.

33. Efforts have also been made to reconstruct, in such a way as to acquire comparable data, the experience of two member States engaged in mineral exploration. They show that in circumstances that are somewhat similar to, although not identical with, Fund operations, a revolving status could be reached in a period of some 20 years.

34. Since the evidence at hand is insufficient to predict the time span required for the Fund to revolve, this matter will be kept under continuing investigation and the Governing Council will be informed of any significant results. It should be emphasised, however, that there are sufficient indications to support the underlying concept of a fund that would revolve within a reasonable period, provided sound management is applied and resources are concentrated on promising avenues in keeping with the Fund's exploration concepts. Studies made show that by application of the Replenishment Contribution indicated in paragraph 20 above, there is a very high degree of probability that the Fund would reach revolving status within a period of less than 25 years.

CHAPTER II - ORGANIZATION AND MANAGEMENT

35. The organization and management of the Fund should be designed so as to ensure maximum efficiency. The Administrator will establish clear lines of responsibility for direction of the Fund while maintaining close relationships between it, the UNDP, the United Nations and other concerned international agencies. The Fund will build up its own technical and management staff as expeditiously as possible and commensurately with its resources and volume of operations. In the initial stages the Administrator will make all possible use of existing technical staff both in the UNDP and in the United Nations, as well as of available administrative machinery and contracting and other facilities, with appropriate arrangements for reimbursement of their costs from the Fund's resources.

Organization

36. In conformity with Economic and Social Council resolution 1762 (LIV), paragraph 1(n), the Administrator, in full consultation with the Secretary-General, has appointed a Director of the Fund, subject to confirmation by the Governing Council.

37. A Joint Operations Group will be established to advise on all major decisions regarding Fund projects. It will consist of officers of UNDP and the substantive office of the competent agency, which for mineral resources will generally be the United Nations.^{5/} The Joint Operations Group will be chaired by the Director and will meet in the composition required for the subject under discussion, including a representative of the UNDP Regional Bureau concerned. It can associate outside experts selected for their professional competence in the technical field covered by the project. The IBRD will be invited to participate fully in the work of the Joint Operations Group.

^{5/} The substantive office in the United Nations is the Centre for Natural Resources, Energy and Transport in the Department of Economic and Social Affairs. If the project falls within the specific competence of IAEA or other United Nations agency, the arrangements will be adapted accordingly.

38. The Administrator, in co-operation with the Secretary-General, may from time to time seek on major issues the advice of a panel of experts of international reputation in the field of resources exploration.

39. Project decisions will be the responsibility of the Administrator, delegated as appropriate to the Director. Major project decisions, including those concerning such matters as the manner of execution of projects, the appointment of project managers, the award of major contracts and the modification, re-orientation or discontinuation of projects as they pass through their phases, will be the subject of prior examination by the Joint Operations Group and the Administrator will take fully into account any recommendations made by the Joint Operations Group on the basis of such examination. Thus the responsibility of the Joint Operations Group for advising on all major project decisions will be integrally related to project management.

40. For each project a project supervisor will be appointed who will be fully responsible for day-to-day technical management of the project at headquarters. A technical manager will be designated who will be responsible for co-ordination and guidance of the project supervisors. Until such time as the Fund has built up its own technical staff, maximum use will be made of the substantive management capability of the United Nations.^{6/}

41. Similarly, pending the formation of a separate staff, the facilities of UNDP and the United Nations will be used, as appropriate for the purpose of recruitment of project personnel, award of contracts and purchase of equipment, and procedures will be modelled on those in force for UNDP-financed projects with such modifications as may be indicated by the operational requirements of the Fund.

Financial management, control and reporting

42. Financial management and control will be exercised by employing existing staff of UNDP during the initial period. Financial regulations will be worked out for the Fund based upon those in force in UNDP, modified as necessary.

43. Services rendered to the Fund by personnel of UNDP and the co-operating United Nations agencies will be reimbursed on the basis of additional costs incurred in the preparation and management of projects.

Project Requests, agreements and field operations

(a) Requests

44. The Resident Representatives will be designated as representatives of the Fund and be the Fund's point of contact in the field. All project requests will be presented by Governments to the Resident Representatives, who will forward them to the Fund with their own comments and recommendations.

^{6/} If the project falls within the specific competence of the IAEA or other United Nations Agency, responsibility for technical management may be assigned to the respective agency.

45. Where review and appraisal of a request or the formulation of a project calls for a field mission, a technical advisor or consultant will be assigned from existing staff or from outside and the costs of such a study or project formulation mission will be included in the project costs if and when a project results from such a mission. The mission will, in co-operation with the Resident Representative, assist the Government in finalizing its official project request.

(b) Project Agreements

46. Upon authorization by the Administrator a Project Agreement will be negotiated with the Government by staff assigned by the Fund under the general supervision of the Resident Representative.

47. Project Agreements will be standardized as far as possible (see Chapter III) but will in each case specifically confirm the goals to be sought and set out the project activities in phases, with the initial phase described in detail.

48. Upon completion of project negotiations with the Government, the project, accompanied by the recommendation of the Joint Operations Group, will be forwarded to the Administrator for provisional approval. Projects provisionally approved by the Administrator will be submitted to the Governing Council for final approval.^{7/} The proposal of the Administrator will include the best possible estimate of costs involved, bearing in mind the special characteristics of exploration activities, which may in many cases allow only the initial phase to be costed with any precision.

(c) Field operations

49. During field operations the project manager and other project personnel in the field will keep in close contact with the Resident Representative and the Fund.

50. Locally available professional and other staff, institutional facilities and equipment and supplies will be utilized by the Fund to the extent conducive to the effective execution of the project. Project personnel will co-operate with the appropriate professional staff of the Government.

51. The Fund will keep the Government informed periodically of the progress of the project and will advise the Government immediately of any major developments.

^{7/} Economic and Social Council resolution 1762 (LIV), paragraph 1(e) provides for this approval by the governing body. The Council may, however, wish to consider delegating to the Administrator approval authority along the lines given for UNDP projects generally.

CHAPTER III - PROJECT AGREEMENTS

52. As the Fund is not covered by the UNDP Basic Agreements with Governments, a separate legal instrument (herein called a Project Agreement) will have to be agreed upon between the Fund and any Government for which the Fund will carry out a project of exploration of natural resources under its national jurisdiction. A standard form of such a Project Agreement has been drafted, but, of course, it will need to be adapted from case to case in order to meet specific requirements of individual projects.

53. The Project Agreement will be designed to regulate the mutual rights and obligations of the Fund and of a recipient Government. It should be fully consistent with the principle of permanent sovereignty of States over their natural resources recognized by the relevant resolutions of the United Nations General Assembly. In short, under the Project Agreement the Fund will undertake to carry out a project of exploration of natural resources under the national jurisdiction of the Government while the latter will undertake to make Replenishment Contributions to the Fund under the circumstances, and in the manner, described in Chapter I. It is particularly the Replenishment Contribution payment feature with its element of uncertainty that distinguishes the Project Agreement from other types of development assistance agreements normally concluded within the United Nations system.

54. Unlike UNDP, the Fund will not enter into both Basic Agreements and specific Project Documents, but only into a single Project Agreement for each exploration project.^{8/} This approach is necessary for the following reasons:

(a) Until more experience is gained with some of the Fund's unique features, it is desirable to proceed on a flexible case-by-case basis rather than to start by entering into a large number of Basic Agreements with Governments, many of which may not wish or be able to receive Fund assistance in the immediate future;

^{8/} UNDP-assisted development projects are covered by two sets of legal instruments; namely, the so-called "Standard UNDP Basic Agreements with Governments" and the so-called "Project Documents". The first, entered into between UNDP and a Government, does not concern any specific development project but is designed to incorporate the basic conditions under which UNDP will assist the Government to carry out such projects. The second, entered into between UNDP, the Government and an Executing Agency charged with the responsibility for carrying out UNDP assistance to a specific project, sets forth in more detail the respective responsibilities of the parties with regard to the project. The advantage of this approach is that certain basic provisions (e.g. regarding privileges and immunities or settlement of disputes that often require ratification on behalf of the Government, can be agreed upon once and for all with respect to all UNDP-assisted projects carried out while the Basic Agreement is in force.

(b) Some of the elements to be included in the Project Agreement may not be covered by the Government's mining laws or other statutes applicable to the Fund's activities so that the Government will need to obtain specific legislative authorization or ratification of its agreement with the Fund. This kind of authorization or ratification is not likely to be granted on an open-ended basis but will usually be restricted to specific areas and/or to specific natural resources. Thus, a separate authorization or ratification may well be required for each specific project in a particular country so that the purpose of simplification sought by a UNDP type Basic Agreement could not be achieved.

55. As a consequence, the Project Agreement must not only cover the essential elements of both the UNDP Basic Agreement and the UNDP Project Agreement, but, more importantly, it will have to include a substantial number of detailed provisions on the Replenishment Contribution obligations as well as various other features not normally found in development assistance projects concluded within the United Nations system. The Project Agreement may include provisions on matters contained in the following paragraphs 56 to 61.

56. Privileges and immunities: Following the example of the UNDP Basic Agreement, the Project Agreement will provide that the Government will apply to the Fund, as well as to its officials, property, funds and assets, the provisions of the Convention on the Privileges and Immunities of the United Nations. With regard to privileges and immunities of consultants, contractors and their personnel (except nationals of the Government) employed by the Fund to carry out a project or part thereof, the Project Agreement will include provisions similar to those used in Project Documents for UNDP-assisted projects. Such Privileges and Immunities are designed only to facilitate the effective discharge of responsibilities of the Fund under the Agreement.

57. Settlement of disputes: The Project Agreement will provide for the settlement by arbitration of any controversy that might arise between the Fund and the Government under the Project Agreement. For this purpose, arbitration clauses similar to the ones set forth in UNDP Basic Agreements or in IBRD Loan Agreements will be used.

58. Work plan: Attached to the Project Agreement will be a work plan describing the work to be performed by the Fund in carrying out the project. The work plan and the respective provisions in the Project Agreement will be different depending on whether the Fund is to carry out an exploration project or a feasibility investigation:

(a) In case of an exploration project, it will naturally be difficult to define in advance the kind and the amount of work to be carried out by the Fund as well as the Fund's respective expenditure for the whole project period. The work plan will therefore include the minimum work, which the Fund will be obligated to carry out as the first phase of the Project, expressed in inputs in monetary terms, and in objectives to be agreed between the Fund and the Government in each specific case. The work plan should be followed by a broad outline of additional work that, based on its findings, the Fund may subsequently undertake. The Project Agreement will entitle the Fund, based on an objective technical evaluation of the results obtained in carrying out the exploration project, to decide in its own discretion at any time whether or not further work is justified, and if so, its nature and

extent. Whenever in the course of the Fund's activities on a project, qualified public or private interests are willing to undertake the further exploration activities leading to exploitation in the Fund's project area, the Fund, at the request of the Government, may agree to discontinue its exploration activities, provided that the Fund will retain all its rights to Replenishment Contributions with respect to the exploitation in the project area. The Project Agreement for an exploration project will only cover the Fund's exploration work; if a feasibility investigation is to be carried out (whether in addition to, or without, a previous exploration project of the Fund), a separate Project Agreement will be concluded between the Fund and the Government;

(b) In case of a feasibility investigation, the work plan will describe in detail the work to be performed by the Fund, and the Project Agreement will provide for the Fund's obligation to carry out the work so described.

59. Final report. At the conclusion of the exploration activities carried out by the Fund, the Fund will submit a final report to the Government specifying whether or not minerals were identified. If a mineral deposit is identified, it will be referred to in the final report as a "reported mineral deposit". A "reported mineral deposit" shall be any or all occurrences of reported mineral or minerals having known or potential economic value that have been investigated in a professional manner to the stage where a possible economic potential can be indicated in respect of composition and possible grade and tonnage of valuable elements or compounds in the deposit. The final report will contain geological, geochemical, geophysical, drilling and other survey data collected during the exploration work. In particular, the results of elemental analysis on all samples will be recorded in the final report together with illustrations accurately depicting the type, location and extent of the sampling which may entail pitting, trenching, drilling or other means of access to the deposit as determined by the Fund's technical representative on the project. The Project Agreement will provide that the Government shall have an opportunity to express its views to the Fund:

(a) As to whether all obligations under the Agreement have been fulfilled by the Fund.

(b) As to its acceptance of the reported minerals listed in the final report in so far as their occurrence can be deemed to be of potential economic significance. If the Government should not agree that the report meets these requirements, the Government and the Fund shall consult as to the measures required and, failing agreement on such measures, the matter will be submitted to arbitration.

60. Duration of the Project Agreement: The Project Agreement will be concluded for a period of 30 years. As a consequence, 30 years after the date of the Agreement, the Agreement itself and all the rights and obligations of the parties thereunder will terminate, irrespective of whether up to that moment the Fund has received Replenishment contributions on a discovery for 15 years, for a shorter period of time, or not at all. In addition, the Project Agreement will provide for termination prior to the end of the 30 years' period in the following circumstances:

(a) The Government will have the right to ask for the Project Agreement to be terminated by arbitration if the Fund has failed to perform its obligations and has not improved its performance within a given period of time.

(b) The Fund will have the right to ask for the Project Agreement to be terminated by arbitration if circumstances (including the failure of the Government to perform its obligations under the Agreement) arise and continue to exist which, in the judgement of the Fund, interfere with the successful completion of its project.

(c) If the Fund is unable to make a discovery of natural resources and decides to discontinue its exploration activities, it will submit a negative final report to the Government stating its findings and its decision. As of the date of this report, the Project Agreement and all the rights and obligations of the parties thereunder (including the Fund's right to receive Replenishment Contributions if discoveries in the project area should subsequently be made by others) will automatically terminate.

(d) Whenever the entire Replenishment Contribution due the Fund under the Project Agreement will have been made to the Fund's satisfaction prior to the expiration of the 30 years' period, the Project Agreement and all the rights and obligations of the parties thereunder will terminate upon dispatch by the Fund to the Government of a notification that these payments have been made.

61. Effectiveness of Project Agreement: Both because of the unusual features of the Project Agreement and because of its long duration, the Fund will use every precaution to ensure that the Project Agreement becomes a valid and binding obligation of the Government. Following the example of the IBRD Loan Agreements, the Project Agreement will stipulate that it shall not become effective until evidence satisfactory to the Fund shall have been submitted to the Fund showing that the execution and delivery of the Project Agreement on behalf of the Government shall have been duly authorized or ratified by all necessary governmental agencies. Depending on the Government's laws, the authorization or ratification may involve the issuance of a governmental decree or a ratification decision by the Government's legislative authority or other action. Included in the evidence to be submitted to the Fund will be a legal opinion of counsel acceptable to the Fund (in most cases, this will be the Government's highest legal officer) confirming that the Project Agreement has been duly authorized or ratified by, and executed and delivered on behalf of, the Government and that it constitutes a valid and binding obligation of the Government in accordance with its terms.

(TRANSLATION)

MINISTRY OF MINING AND METALLURGYBOLIVIA

Executive Decree 14549

Gen. Hugo Banzer Suarez
PRESIDENT OF THE REPUBLIC

Whereas:

Under the Five-Year Economic and Social Development Plan - priority has been assigned to the execution of a mining prospection and exploration program, for the purpose of determining the economic importance of the non-renewable resources of the country and with - the aim of planning accordingly the rational and technical production of minerals;

The prospection and the exploration of the national territory are basic and fundamental activities for the economic and social - development of the country and consequently the financing of such - activities is in the interest of the nation;

By Supreme Decrees Nos. 13160, 13165 and 13167 of December 10, 1975 it was instituted the National Mine Exploration Fund (Fondo Nacional de Exploración Minera) as a revolving and contingent fund, - dependent from the Ministry of Mining and Metallurgy and whose - functioning and initiation of activities were subject to the issuance of a specific regulation;

According to the above mentioned Decrees the Ministry of - Mining and Metallurgy has performed the necessary studies and - evaluations through the National Mine Exploration Fund Program, whose conclusions, recommendations and work programs have been approved by the National Economy and Planning Board at its meeting held on March 9, 1977;

For the fulfillment of its objectives and for the performance of its functions, the National Mine Exploration Fund requires an - adequate capital, the recovery of which will make it possible to use it as a revolving fund within the contingency margins common to the - mine exploration activity;

As provided for in articles 4 and 69 of the Law of Administrative Organization of the Executive Power, approved by Executive - Decree No. 10460 of September 12, 1972, the decentralized - administration has been established as the administrative action - entrusted to public and semi-public institutions and enterprises with power of decision of technical, economic, financial and administrative matters for the performance of their specific duties;

The National Mine Exploration Fund, such as it has been projected, will give contingent credits for mining exploration projects to natural or juridical persons, either public or private, and will channel internal and external financing for regional prospection programs, the latter to be executed by specialized state-controlled agencies, according to the characteristics set for development corporations by articles 78 and 80 of the Law of Administrative Organization of the Executive Power;

The development of financial operations of the revolving and contingent National Mine Exploration Fund will generate benefit for the economy of the country in general and for the Mining-Metallurgy Sector in particular, with a high social profitability as a result of the obtention of more hard-currency revenues, more employment opportunities and increased fiscal revenues;

Inasmuch as the revolving and contingent National Mine Exploration Fund, as a state-owned agency, will finance the development of mine exploration, which is an activity of public interest, it is necessary to exempt its operations and purchases from payment of national, departmental, municipal and customs taxes and fees applicable to the importation of supplies, machinery, instruments, equipment, vehicles and any other materials necessary for its operations;

The feasibility study of the National Mine Exploration Fund approved by the National Economy and Planning Board assumes that an able and vigorous management will be necessary for the systematic and opportune performance of the successive operations of prospection and exploration; it is therefore necessary to grant the Fund a treatment of exception from the provisions contained in Executive Decree No. 18964 of September 17, 1976 and to entrust the Fund's Board with the power to regulate expressly the procedures to be followed by it for contracting consulting firms and public or private services organizations;

It is necessary to create a decentralized public entity with legal capacity and with management autonomy, dependent from the Ministry of Mining and Metallurgy, in conformity with Title III, Chapter III of executive Decree No. 10460, entrusted with the responsibility of financing, following-up and evaluating mine prospection projects in accordance with the regulations of its Operations Plan;

AT MINISTERS MEETING,

IT IS HEREBY DECREED:

Chapter I

ESTABLISHMENT AND LEGAL STATUS

Article 1. It is hereby established the National Mine Exploration Fund as an agency dependent from the Ministry of Mining and Metallurgy, entrusted with the responsibility of promoting the

discovery of mineral deposits through the financing of prospection and exploration projects.

Article 2. The National Mine Exploration Fund shall have the status of Public Development Corporation, with legal capacity acknowledged by the State and with management and financial autonomy, with its own independent capital and assets constituted by public funds assigned by the Supreme Government as a contribution of capital and by any property owned by the Fund at the present time or to be acquired by it in the future, as well as by any other special contributions. It shall also have full technical independence for the efficient fulfillment of its purposes, powers and duties, and it shall be organized in accordance with the Program existing at the present time in the Ministry of Mining and Metallurgy at the level of Investment Project.

Chapter II

DOMICILE

Article 3. The National Mine Exploration Fund, as an State agency, is hereby established to exist for an indefinite period of time and with legal domicile in the city of La Paz.

Chapter III

CAPITAL

Article 4. The State, through the General Treasury of the Nation, shall contribute to the National Mine Exploration Fund with up to twelve million dollars, in yearly contributions equivalent at least to one million two hundred thousand dollars each, starting in the 1978 financial period. In case of duly justified need, the State may increase the total amount of capital by increasing the amount of its yearly contributions. Funds obtained from external sources through State agencies created for such purpose, and special contributions received and the profit obtained by the National Mine Exploration Fund, shall be incorporated to its capital subject to prior express legal regulation issued to that effect.

Article 5. Within thirty days from the date of enactment of the presente Executive Decree, the Bolivian Central Bank shall give a credit to the Ministry of Mining and Metallurgy for the exclusive use of the National Mine Exploration Fund, in the amount equivalent to one million two hundred thousand dollars, in the form of a deposit on a special account to be opened for that purpose. The conditions of that credit will be agreed between the Bolivian Central Bank and the Ministry of Mining and Metallurgy.

Article 6. The Ministry of Mining and Metallurgy is hereby authorized to transfer in favor of the Fund all the balance existing as to the date of this Executive Decree under its Investment Budget "04-C", as well as all the equipment, materials and supplies purchased with funds from the said investment budget.

Article 7. The obtention of funds from internal and external sources as well as from the General Treasury of the Nation chargeable to the Fund's account, shall not bind neither the assets nor the administrative autonomy of the public agencies and corporations performing mine prospection and exploration projects.

Article 8. The National Mine Exploration Fund will apply all its capital to the financing of mine prospection and exploration activities, in accordance with its Operations Plan.

Chapter IV

DEFINITIONS

Article 9. For the purpose of this Executive Decree, the following expressions will have the meanings as hereinafter specified:

- a) Regional Prospection. The searching for and the location of mineral deposits in a given territory, with the help of guides or by using several different criteria, as well as by technical methods, particularly geological, geochemical and geophysical methods.
- b) Exploration. The determination of the size and form as well as the contents and quality of a mineral at a know deposit, either in active or inactive state. Exploration also includes evaluation, which consists of the appraisal of the economic value of the mineral reserves discovered, relative to the useful life of the deposit, to the benefit which may be obtained therefrom and to the convenience of making an investment for the industrial development and exploitation of the mineral reserves.

Chapter V

OBJECTIVE

Article 10. The principal objective of the National Mine Exploration Fund will be the financing of mine prospection and exploration activities;

Chapter VI

FUNCTIONS AND AUTHORITY

Article 11. For the fulfillment of its specific objective, the National Mine Exploration Fund will have the following functions and authority:

- a) To promote mine exploration;
- b) To obtain and manage funds for the financing of mine prospection and exploration projects;

- c) To finance, partially or totally, regional prospection - programs to be carried out by specialized State agencies;
- d) To give contingent credits under special repayment plans, for mine exploration projects, to natural or juridical - persons, either public or private, engaging in mining - activities;
- e) To execute contracts for the financing of regional - prospection and exploration programs with any individual under Mining Law.
- f) To contract directly with consulting or services firms or organizations, either public or private, the execution of its programs, subject to its by-laws and internal - regulations;
- g) To approve, follow-up and technically evaluate regional - prospection projects to be financed;
- h) To select, control, follow-up and technically evaluate - exploration projects to be financed;
- i) To approve, follow-up, evaluate and recover investments - made by the Fund on regional prospection projects;
- j) To approve, follow-up, evaluate and recover investments - made by the Fund on exploration projects;
- k) To submit to industrial financing institutions, for - implementation, successful projects financed by the Fund;
- l) To make arrangements for the obtention of technical and - financial assistance from public and private organizations, either national or international or from foreign - governments;
- m) To receive as grants additional capital contributions or funds;
- n) To participate together with entities of the Mining Sector in the preparation of projects for the promotion of - prospection and exploration activities;
- fi) To prepare, by action of its Board, the annual internal - and investments budget of the Fund;
- o) To designate, by action of its Board, the required - technical specialized personnel, with power to decide and fix remunerations consistent with the responsibilities of each position;
- p) To reinvest in mine prospection and exploration all funds recovered by the Fund.

Chapter VII

ORGANIZATION

Article 12. The National Mine Exploration Fund will initiate its activities with the following internal technical-administrative organization:

As decision-making units, a Board and a General Manager; as advisory unit, a Legal Counsel; as administrative supporting unit; an Administrative Department, and as operative and regulating units, a Projects Division and an Investment Division.

Article 13. The Board of the National Mine Exploration Fund will be presided by the Minister of Mining and Metallurgy, represented by the General Manager, who will be the chief executive officer of the Fund, according to Article 80 of the Law of Administrative Organization of the Executive Power.

The Board will be constituted by a representative from the Presidency of the Republic, a representative from the Ministry of Planning and Coordination, a representative from the Ministry of Mining and Metallurgy, a representative from the Bolivian Mining Bank and a representative from the Geological Service of Bolivia.

Article 14. Not later than one hundred twenty days from the date of taking office, the Board will submit to the Executive Power for consideration, the By-laws and Regulations which will rule the activities of the Fund as a Public Corporation.

The Fund's By-laws will prescribe expressly the procedures to be followed for taking the following action:

- a) Recovery of the funds already invested by the General Treasury of the Nation on regional prospection projects being carried out by the Geological Service of Bolivia pursuant to Supreme Decrees Nos. 18160, 18165 and 18167 of December 10, 1975, and the reinvestment of part of the funds recovered from the said projects on the purchase of equipment for the Fund;
- b) Recovery of resources to be invested by the Fund on regional prospection projects;
- c) Obtention of funds from external sources through States agencies created for such purpose, and the application of those funds to the financing of mine prospection and exploration activities;
- d) Selection, granting, control, follow-up and recovery in revolving form, of contingent credits for exploration activities;
- e) Contracting directly the services of consulting firms and services organizations; either public or private, for the execution of the Fund's projects.

Chapter VIII

EXEMPTIONS AND LIBERATIONS

Article 15. The Fund is hereby exempted from payment of national, departmental, university, municipal and customs taxes and fees applicable to the importation of supplies, machinery, instruments, equipment, vehicles and any other materials necessary for its activities. In each case, the corresponding liberation will be obtained from the Ministry of Finance.

Article 16. The National Mine Exploration Fund is hereby expressly authorized to engage directly the services of consulting firms and services organizations, either public or private, subject to the provisions of the Fund's By-laws and internal regulations, and such action is hereby exempted from application of the provisions under Supreme Decree No. 18964 of September 17, 1976.

Chapter IX

PERSONNEL

Article 17. Requirements, rights and obligations for officers and employees of the National Mine Exploration Fund shall be ruled by the Fund's By-laws and by applicable existing regulations.

Article 18. The officers and employees of the National Mine Exploration Fund will be entitled to the social benefits prescribed by law for the personnel of decentralized public corporations.

The ministers of Planning and Coordination, of Finance and of Mining and Metallurgy are entrusted with the execution and enforcement of this Executive Decree.

Given at the Government Palace, in the city of La Paz, on the twentysixth day of April of the year one thousand nine hundred seventy seven.

(Signed) GEN. HUGO BANZER SUAREZ
(Signed) Oscar Adriázola Valda
(Signed) Juan Pereda Asbún
(Signed) René Bernal Escalante
(Signed) Juan Lechín Suarez
(Signed) Carlos Calvo Galindo
(Signed) Jaime Niño de Guzmán
(Signed) Julio Trigo Ramírez
(Signed) Carlos Rodrigo Lea Plaza
(Signed) Mario Vargas Salinas
(Signed) Alfonso Villalpando Armaza
(Signed) Alberto Natush Bush
(Signed) Guillermo Jiménez Gallo
(Signed) Guido Vildoso Calderón
(Signed) Santiago Maese Roca

THE ABOVE IS A TRUE COPY OF A LEGALIZED TRANSCRIPT.

La Paz, May 4, 1977